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MADRAS DISTRICT GAZETTEERS.

THE NILGIRIS.

VOLUME I.

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MADRAS DISTRICT GAZETTEERS.

THE NILGIRIS.

BY

W. FRANCIS,

INDIAN CIVIL SERVICE.

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PREFACE.

E original 'District Manual' of the Nilgiris was published in 1880. It was chiefly compiled by the late Mr. H. B. Grigg, .C.S., but several of the chapters were contributed by others. his system necessarily resulted in considerable overlapping, and thus, though the present volume is much smaller than its predecessor, it omits, it is hoped, little of the contents of the latter which is of permanent interest.

As with the other District Gazetteers of the present series, statistics have been for the most part relegated to a separate Appendix, which is to be revised decennially, after each Census.

Thanks to the various gentlemen, official and non-official, who have kindly rendered me assistance, have been tendered where possible in the body of the volume; but special obligations have been incurred to Sir Frederick Price, K.C.S.I., whose forthcoming work on Ootacamund, the capital of the District, has exhausted the available material on the most interesting of all the subjects dealt with in the following pages.

This is the last of the District Gazetteers which I have been directed to prepare, and I wish to acknowledge gratefully the valuable and untiring help which I have received throughout the production of the series from my two Assistants, M.R.Rys. S. Dandapani Aiyar and C. Hayavadana Rao.

W. F.

March, 1907.

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GAZETTEER

OF THE

NILGIRI DISTRICT.

CHAPTER I.

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CHAP. I. GENERAL DESCRIPTION. Position and boundaries.

THE Nilgiri Hills—properlyNíla-giri, 'the Blue Mountain,' and formerly usually written 'Neilgherry'—consist of the great plateau (about 35 miles long, 20 broad and some 6,500 feet high on an average) upheaved at the junction of the ranges of the Eastern and Western Gháts, which run southwards at a converging angle through the Madras Presidency. The name Nílagiri, which (see p. 92 below) is at least 800 years old and was bestowed by the dwellers in the plains below the plateau, was doubtless suggested by the blue haze which envelops the range in common with most distant hills of considerable size. The idea that it is

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due to the violet blossoms of the masses of *Strobilanthes* which periodically carpet wide stretches of the grass downs of the plateau is a latter-day refinement: these plants do not grow along the outer edge of the hills, are invisible from the low country, and so are not likely to have originated the name.

The district called the Nilgiris includes, besides the great plateau from which it is named, three widely different outlying tracts; namely, a strip of malarious jungle skirting the northern foot of the plateau; the Ouchterlony Valley on the west, a deep recess in the high wall of the plateau called after the man who (see p. 373) first exploited it; and, still further west, the country known as the South-east Wynaad (' the land of swamps'), a table-land of bamboo forest, paddy-flats and bogs lying about 3,500 feet lower than the plateau and the same height above the sea. The map in the pocket at the end of this volume shows the position of these three areas. Excepting Madras City, the Nilgiri district is by far the smallest in the Presidency, its area and population (957 square miles and 111,437 persons) both being less than those of many a taluk in the plains.

The natural boundary of the plateau along much of its southern side is the Bhaváni river, and that along a great part of its northern frontier is the Moyár, which joins the Bhaváni near the mouldering fort of Dannáyakankóttai close under Rangasvámi Peak, the easternmost height of the Nilgiris. But, as the map shows, the administrative boundary follows far less simple lines, running sometimes along the top of the steep crests of the hills, sometimes in a bee-line across impenetrable jungle, and sometimes along the course of one or other of the numberless streams which pour down to join the aforesaid two rivers. The boundary of the South-east Wynaad follows no natural features at all on the north and west; but on the east it runs along the Paikára river and the edge of the plateau above, and on the south along the crest of the Wynaad tableland just where it drops sharply down to the steamy lower levels of Malabar.

The Nilgiri district marches on the north with the Mysore State, a plateau some 4,000 feet lower which is upheld on either side by the Eastern and Western Gháts and merges by insensible degrees into the Wynaad. On the west, it joins the Malabar Wynaad, a tract very similar to the South-east Wynaad. South, it is bounded by the lowlands of Malabar proper and the deep and malarious valley of the Bhaváni, part of which is in Malabar and part in Coimbatore; and its eastern frontier is formed by the latter district, the two being separated at the north-eastern corner by the

Gajalhatti ('elephant village') pass which, being a short cut from Mysore to the Carnatic plains, was of importance in the wars between Mysore and the East India Company at the end of the eighteenth century.

Taluks and chief towns.

The plateau is traditionally divided by its inhabitants into four tracts called Péranganád (' the country of great Ranga,' the deity to whom Rangasvámi Peak is sacred) on the extreme east; Mérkunád (' the western country ') west of this; Tódanád (' the country of the Tóda tribe ') on the north; and Kundahnád, or the higher south-western corner of the plateau formed of the Kundah range, the best centre for big game on the Nilgiris. But for administrative purposes it is arranged into the two taluks of Coonoor, which embraces the first two of the above four divisions, and Ootacamund, which includes the other two and the strip of jungle at the northern foot of the plateau which has been already referred to. The South-east Wynaad and the Ouchterlony Valley together form a third taluk known, from its head-quarters, as the Gúdalúr taluk. The former area consists of the three amshams, or parishes, of Chérankód, Munanád and Nambalakód.

The only places of any size in the whole district are the two municipalities of Ootacamund (the head-quarters) and Coonoor; the latter's near neighbour the cantonment of Wellington; the far smaller hill-station called Kótagiri; and the Gúdalúr already mentioned. These and other spots of interest are referred to in more detail in Chapter XV below. The chief routes up to the plateau are the Sigúr ghát on the north, from Mysore; the Gúdalúr ghát on the west, from the Wynaad; the Kótagiri ghát on the south-east, from Méttupálaiyam; and, most used of all, the Coonoor ghát on the south, also from Méttupálaiyam, where a road and a rack railway climb a deep ravine side by side. These and other roads are referred to more particularly in Chapter VII.

Natural divisions; the plateau.

The general appearance of the two very dissimilar portions of which the district is made up—the plateau and the Wynaad—deserves to be described in some detail. Their soils and agriculture are referred to in Chapter IV and their climates in Chapter IX.

The plateau is a true tableland, its average height being very uniform. But there is not a square mile of level ground in the whole of it, its surface being broken by endless undulations which in places swell into considerable and distinct ranges. It rises most abruptly from the plains below it; and on the west, above the Ouchterlony Valley and southwards, its sides are often sheer,

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bare walls, hundreds of feet in height and too steep even for trees to obtain a footing on them. Elsewhere dense forest covers almost the whole of its slopes.

It is first of all divided east and west into two fairly equal but dissimilar parts by a range of heights running north and south of which Dodabetta ('big mountain') is the tallest point. This hill, which rises immediately east of Ootacamund, is 8,640 feet above the sea and except the Ânaimudi Peak in Travancore (8,837 feet) is the highest point south of the Himalayas. The prominent observatory which crowns it is referred to on p. 251 below. From Ootacamund itself, the importance of this range cannot be appreciated; one is too close to it. But from any distant part of the plateau, whether east or west, it is seen to stand high above the surrounding country and to rise gradually upwards, from the north and the south, to the broad shoulders of its topmost height. Its climatic influence is immense; for it shelters the eastern part of the plateau from the south-west monsoon and the western part from the north-east rains, giving them widely differing seasons.

East and south of the Dodabetta range, in the Coonoor taluk in fact, the plateau (except round about Kódanád in the north-east corner, where the country resembles that further west described below) is extensively cultivated by the immigrant tribe known as the Badagas. This does not improve its appearance; the great forests have mostly been felled and their place taken by the poorest low scrub or by fields of miserable cereals surrounding the squat red-tiled houses of numerous hamlets; the country is deeply scoured by every shower of rain until the infertile red and yellow sub-soil clays are laid bare; and, owing to the Badagas' former custom of shifting their cultivation from year to year to new patches of land, grass has been prevented from getting any firm hold on the denuded hill-sides. Only on the slopes of the plateau (which are too steep for cultivation) and in a few isolated Government reserves, does the forest flourish in its virgin beauty.

West of Dodabetta, however, the Badagas are more rare; hardly a field or a village (except the little clusters of huts belonging to the pastoral Tódas) is to be seen; and the country consists of a sea of rounded green hills, rising now and again into more prominent heights and ranges, which are covered with short grass sprinkled with bright flowers and are often dotted with rhododendron trees. These rounded hills are divided each from each by streams or bogs, and nestling in their wrinkles are

beautiful little woods, locally known as shólas, the edges of which have been so sharply defined by years of grazing and (perhaps) grass fires that they look almost like artificial plantations in some English park, and the foliage of which yearly assumes a wide variety of tints—from the brilliant rose-colour of the young shoots of certain species in the spring to the deep green of the ripe autumn leaves.

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Its chief heights.

Of the various heights and ranges which rise above the general level of the plateau, that in the centre, which is crowned by Dodabetta, has already been mentioned. Three other noticeable points in this great mass are Snowdon, an almost perfect cone 8,299 feet above the sea; the Club Hill, 8,030 feet; and Elk Hill, 8,090 feet; which three, with Dodabetta, surround the sheltered valley wherein lies Ootacamund. The lake at Ootacamund, it may here be noted, is 7,228 feet above the sea, and St. Stephen's Church there 7,429 feet. Southward and eastward of the Dodabetta range the country falls rapidly away and the heights are smaller. To the south, the chief of them are Dévashóla ('the divine wood') hill, 7,417 feet, prominent from the blue gum trees which crown it and the centre of a coffee-growing area; further east, Kulakambai hill (*kambai* means a village of the Irula jungle-tribe) which from its top, 5,601 feet above the sea, commands glorious views across the Bhaváni valley at its foot to the Lambton's Peak range (so called from Colonel William Lambton, F.R.S., Superintendent of the Great Trigonometrical Survey) in Coimbatore district; east again, Hulikal Drug (6,294 feet), on the south side of the great ravine up which runs the rack railway to Coonoor, and crowned by the old fortress referred to on p. 328; facing it, on the north side of the ravine, Coonoorbetta or Teneriffe, so prominent from Coonoor and 6,894 feet in height; north of this, about midway between Ootacamund and Kótagiri, the Rallia hill (7,375 feet) amidst the reserved forest of the same name; near it, Dimhatti hill (6,903 feet) standing above the deserted sanitarium (p. 325) of that name; and, at the extreme eastern limit of the district, Rangasvámi Peak, the holiest hill on the plateau.

West of the Dodabetta range, the heights are greater and form more connected ranges. A short distance west of Ootacamund is a group of three which are well known to followers of the Ootacamund Hunt; namely, Hecuba (the 'Ulnád' of the maps, 7,793 feet) called after a hound which was killed by a fall down its sheer side; Staircase (officially known as Kattakádu, 7,933 feet) so named from its steepness; and the hill above 'Shaw's Plantation,' marked Kulkudi in the maps, which is 8,002 feet high. In the south-western corner of the district rise

CHAP. I. GENERAL DESCRIPTION.

the Kundahs, a regular range of hills most prominent from Ootacamund, the chief heights in which are the precipitous Avalanche hill (p. 345), two peaks on which, called Kudikádu and Kolari on the maps, are 8,497 feet and 8,613 feet above the sea and so rank next to Dodabetta; the conical grass-covered Dérbetta, or Bear hill, 8,304 feet; and, south of it, Kolibetta, 8,182 feet.

This Kundah range forms a kind of rim to that side of the plateau, rising high above the general level, and it is continued on the north by the great line of peaks just south of the Ouchterlony Valley, the chief of which are Pichalbetta (8,348 feet), Nilgiri Peak (8,118 feet), which was long held to be unclimbable, and the sheer Múkarti Peak (8,380 feet) the precipitous side of which, whence the souls of men and buffaloes are believed by the Tódas to leap together into the nether world, is such a landmark from Ootacamund. This last is referred to again on p. 354. It commands the most impressive view in all the plateau.

The Wynaad.

The general appearance of the Wynaad differs root and branch from that of the plateau. Viewed from the western edge of the latter it seems to be an almost uniform expanse of gently undulating jungle, broken only by the patches of brighter green which mark the paddy-flats in its numerous swamps. But when the traveller gets down to it, he finds that its undulations are very considerable, some of them running up into small hill-ranges, and that the jungle differs widely in different parts. On the north are the heavy forests of Benne and Mudumalai, which formerly contained splendid teak and blackwood. Round Gúdalúr the jungle consists mainly of clumps of bamboo, interlaced with giant creepers and rendered almost impassable by the thick undergrowth of the hateful lantana, bearing blossoms of half a dozen hues. Scattered trees fight doggedly for life amid the tangle. To the south-west the growth becomes more open, low hills covered with coarse grass and dwarf date palms rise above it, and the bamboo and lantana give place to small forest trees. Round the old gold-mining centres of Dévála and Pandalúr in this corner of the taluk are hillocks covered with short, sweet pasture and little dark woods which remind one of the Kundahs. The road which runs through these two villages to the Malabar Wynaad commands magnificent views of the low country and the Ouchterlony Valley (that of this latter from near Nádgáni is a finer prospect than any on the plateau itself) but the other main routes lead through interminable jungle with no outlook whatever, and the traveller feels like a mouse in a corn-field.

CHAP. I. GENERAL DESCRIPTION.

The Wynaad hills are naturally much less in actual height than those on the plateau, but several of them are prominent enough, the general level of the country being so uniform that peaks of any size stand out noticeably. The biggest are Maruppanmadi hill (5,014 feet), the highest point in a range which crosses the country from north to south and parts of which contain so much magnetic iron ore as to render the compass useless in their neighbourhood; the Needle Rock in the same range—a bare, brown, razor-backed mass of gneiss which is almost sheer on one side; the Hadiabetta hill (3,788 feet) above Pandalúr; and the Gúlúr hill on the northern boundary, 3,766 feet above the sea.

Rivers and waterfalls.

The Nilgiri plateau is drained by hundreds of streams, most of which are perennial and all of which are beautiful. Between almost every pair of undulations runs some rivulet or other, and the larger of these, with their alternate quiet pools and chattering rapids, resemble the burns on a Scotch moor in everything except their lack of fish. In some half a dozen instances they combine to form streams which may be dignified by the name of rivers, and all of these eventually fall into either the Moyár on the north or the Bhaváni on the south and so, eventually, into the Cauvery. Their conservation is thus of interest to the owners of the Tanjore paddy-fields and projects are now on foot to form irrigation reservoirs high up the Bhaváni valley and near Dannáyakankóttai.

The map shows the courses of these streams better than any quantity of written description. Beginning on the north of the plateau the first of the larger ones is the Sígúr river (so called from the village past which it flows at the foot of the hills) which runs down to the Moyár alongside the Sígúr ghát. It rises in the slopes above the Ootacamund lake, flows through this latter, is joined further down by the well-known 'Sandy Nullah stream' and eventually forms the Kalhatti falls, 170 feet high,[1] facing the Kalhatti travellers' bungalow on the Sígúr ghát.

In the north-east corner of the plateau, a river (sometimes called the Mudukádu stream) drains into the Moyár the rainfall of the Orange Valley, a deep ravine so named from the wild orange trees which used to abound there and an extremely popular spot in the days before Kótagiri and Dimhatti, which are close to it, had fallen out of fashion. 'The Old Forest Ranger,'[2]

[1] This and the heights of the other falls referred to below were ascertained many years ago by Captain Freeth, of the Revenue Survey.

[2] *The Old Forest Ranger*, by Major Walter Campbell, 3rd edn., London, 1853, p. 275.

CHAP. I. GENERAL DESCRIPTION.

for example, goes into raptures about it and declares: 'The Orange Valley! There is perfume in the very name! Our old heart warms, and a delicious languor steals over our senses, as we recall to mind the silent, balmy, incense-breathing morn when first we trod the flowery shades of that enchanting spot. . . . It seemed to us the abode of peace and innocence; a place for young lovers to walk hand in hand, culling the golden fruit and twining into bridal wreaths the snow-white blossoms which made the very air love-sick with their fragrance.' The valley is a deep indentation, averaging not more than 4,500 feet above the sea, shut in by high hills. Its temperature is thus much warmer than that of the higher plateau, and this peculiarity and the richness of its soil render its vegetation more nearly tropical than that of any other part of the Nilgiri hills. Oranges, limes, pomegranates, jack-trees and mangoes still flourish there, but the inroads of Badaga cultivation have of late years resulted in the valley being stripped of much of its forest and most of its charm.

From near Kótagiri runs southwards the Gathada halla, which at 'St. Catherine's fall' makes a leap of some 250 feet (the second highest waterfall in the district) into a considerable chasm and thence hurries down to the Coonoor river near Méttupálaiyam. In the lower part of its course it is known as the Kallár ('rocky river'), and the suspension road-bridge and railway girder-bridge across it are well known to travellers up the Coonoor ghát. St. Catherine's fall is named after the wife of Mr. M. D. Cockburn, M.C.S. She and her husband were some of the first Europeans to settle in Kótagiri and they lie buried side by side in the cemetery there. A path runs to the head of the fall from that station, but to get a good view of the water one has to clamber down the side of the ravine. A distant but picturesque glimpse of it is obtained from the Dolphin's Nose rock near Coonoor.

The Coonoor river, which races down the ravine up which the Coonoor ghát is carried, is principally made up of the Coonoor stream, which drains the basin wherein Coonoor and Wellington are built, and of the Kátéri stream which rises in the Kátéri and Kéti valleys alongside. The 'Kátéri falls' on the latter, which drop about 180 feet sheer, are a favourite point for excursions from Coonoor and Ootacamund and have now been utilized to generate electricity to drive the machinery at the Aravankád Cordite factory referred to on p. 312 below.

The Kulakambai stream, which drains the country round about the hill of that name already mentioned, is much smaller, but is of interest as forming the highest unbroken fall (400 feet) on the plateau.

West of it, the Kundah river, flowing in a very deep, steep-sided ravine, separates the Kundahs from the rest of the plateau and collects the streams which drain the well-known Nanjanád valley just south-west of Ootacamund, the beautiful Emerald valley farther west, the valley (nearly parallel to this last) which fronts the Avalanche travellers' bungalow and runs down from the Avalanche hill already mentioned, and other rivulets on the eastern flank of the Kundah range. Its upper waters are called in old papers the Purti stream, from the village of that name near its banks, and just below their junction with the Avalanche stream Mr. McIvor built the hapless bund which goes by his name and is referred to again on p. 352 below.

In the south-west corner of the plateau rises the Billithåda halla, one of the most charming of all its many streams. This drains the western slopes of the Avalanche hill and much of the country between them and Sispára, and is one of the chief sources of the Bhaváni itself.

The extreme west of the plateau is drained by the largest of all its rivers, the Paikára. This rises on the bleak slopes of Múkarti Peak, receives from the east the Krúrmund and Parson's valley streams (the latter of which, see p. 43, has been stocked with rainbow trout), flows past the Paikára travellers' bungalow, where it is bridged by the road to Gúdalúr and swarms with carp, winds among the low hills searching for a way down to the low country, and at last plunges through a steep and narrow valley by two fine falls, popular picnic-spots for Ootacamund folk, of which the upper is 180 feet high and the lower 200 feet. Finer than either, however, is the series of great leaps in which the river flings itself over the almost sheer side of the plateau down into the Wynaad a short distance further on. The dull roar of these can be heard as far away as the Gúdalúr-Mysore road, four miles off as the crow flies, and from that point, 'frozen by distance,' they look like some great ice ladder laid against the steep wall of the plateau. Thence the Paikára winds in a more leisurely way in and out through deep hollows in the dense, steamy Wynaad jungles, suddenly turns eastwards, drops over a considerable fall near Tippakádu on the Gúdalúr-Mysore road, changes its name to Moyár, passes on down the 'Mysore ditch,' a curious narrow trench with steep sides which is very prominent from several points near Ootacamund—the Connemara Road for example—and eventually joins the Bhaváni at the eastern foot of the plateau.

On the plateau, the Tódas hold this river sacred. No pregnant Tóda woman dare cross it and the men will neither use its water

CHAP. I. GENERAL DESCRIPTION.

for any purpose nor even touch it except when compelled to ford it. Then, having crossed it, they turn and make it obeisance. Even if they cross it by the bridge at the Paikára bungalow they take their right hands from under their mantles as a sign of reverence.[1]

The South-east Wynaad is also plentifully watered. Springs rise in most of its numerous swamps and combine to form streams, locally known as *poyas*, which meander in and out of its jungles and for the most part eventually find their way either into the Paikára or the Pándi. This latter river rises in the Ouchterlony Valley and even there is of considerable volume. It eventually flows down the gháts through a deep ravine and joins the Beypore river of Malabar.

GEOLOGY. The plateau.

The standard account of the geology of the plateau is that published by Mr. H. F. Blanford of the Geological Survey of India in 1859.[2] The hills consist of a great mass of foliated gneissose (not granitic) rocks, of the class now termed charnockite, with a few later dykes of olivine-norites, from an inch to ten feet in width, which are well seen at Coonoor.

Three principal systems of faults occur, and these afford evidence of the manner in which the plateau was originally formed. The first of them, to which was due the formation of the Eastern Gháts, has an east-north-east direction, and to it belong the great faults with a down throw to the south-east which have produced the Eastern Gháts and the south-eastern escarpment of the Nilgiris, and likewise those with a north-western down throw which have formed the great escarpments on the north-west side of the Kundahs and at Naduvattam, just above Gúdalúr. The second of the three systems of faults runs nearly at right angles to the first, in a west-north-west direction, and comprises the Western Gháts, the escarpment on the north-east side of the

[1] Mr. Thurston in *Museum Bulletin*, iv, No. 1, 1.

[2] The earliest paper on the subject is that contributed in 1836 by Dr. P. M. Benza, Surgeon to the then Governor, Sir Frederick Adam, to M.J.L.S., iv, pp. 241–99. It contains a map and a sketch of the 'Devil's Gap' near Sispára. This was followed in 1844 by some observations in the Report on the Medical Topography of the hills published by Government in that year; in 1847 by certain remarks in Major Ouchterlony's report on the survey of the district (M.J.L.S., xv); in 1859 by Mr. H. F. Blanford's fuller account in Vol. I of the *Memoirs* of the Geol. Surv. of India, which contains a map, two sketches of the country and several drawings of geological peculiarities; and in 1861 by two papers by Major Congreve in M.J.L.S., xxii. In Vol. XXX of the *Records* of the Geol. Survey are two notes by Mr. T. H. Holland on the olivine-norite dykes of Coonoor. The gold of the South-east Wynaad has a separate literature of its own, which is referred to later.

Kundahs facing Ootacamund and that from St. Catherine's falls to near Kótagiri. The third of the systems is that to which belong the northern boundary of the plateau and the short southern escarpment of the Kundahs.

Thus the first great disturbance which seems to have occurred was the upheaval of the Eastern and Western Gháts and of the Mysore plateau between them, and the second was that which raised the Nilgiri plateau itself, the area affected being partly bounded by pre-existing lines of fracture. The geological periods during which these movements occurred are not ascertainable, there being no sedimentary rocks to give any clue to them.

Considerable reason exists for the belief that the whole of the plateau had been previously submerged by the sea. Not only does it consist chiefly of the undulations and rounded hills which usually result from marine action, but in several places escarpments may be traced which, though now partly cut up into ravines and rounded spurs by the denudation resulting from the heavy rainfall, were apparently formed by oceans washing their bases. On the south-eastern side of the Dodabetta range, overlooking the Kéti valley, is one of these, and another occurs to the north and north-west of Wellington, where, says Mr. Blanford, 'the projecting terminations of several spurs present a striking resemblance to the rocky headlands of parts of the south coast of England.' Several others might be instanced.

The denudation and alteration of the surface of the plateau by the action of rain has been very great—especially on the Kundahs, which receive the full force of the south-west monsoon. The deep ravines by which the chief streams of the country escape to the plains below (for example, the valleys of the Kallár, Coonoor, Kundah and Paikára rivers) have been chiefly formed by the action of these streams themselves, and everywhere the hill-sides are cut into gullies and nullahs. Many of the interior valleys (notably that traversed by the upper waters of the Paikára) seem to have existed even before the plateau was upheaved, as they contain large beds of alluvium deposited by the streams which now drain them. They appear to have originally consisted of lakes, all outlet for their streams being closed by natural embankments. The water in them rose gradually until it overtopped these banks and then, flowing over them, in course of time cut the narrow ravines through which the streams now escape. There are at present no natural lakes in the district, though artificial ones have been made at Ootacamund, at Burnfoot and Lovedale near by, and at Wellington.

CHAP. I. GENERAL DESCRIPTION.

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The South-east Wynaad is also plentifully watered. Springs rise in most of its numerous swamps and combine to form streams, locally known as *poyas*, which meander in and out of its jungles and for the most part eventually find their way either into the Paikára or the Pándi. This latter river rises in the Ouchterlony Valley and even there is of considerable volume. It eventually flows down the gháts through a deep ravine and joins the Beypore river of Malabar.

GEOLOGY. The plateau.

The standard account of the geology of the plateau is that published by Mr. H. F. Blanford of the Geological Survey of India in 1859.[2] The hills consist of a great mass of foliated gneissose (not granitic) rocks, of the class now termed charnockite, with a few later dykes of olivine-norites, from an inch to ten feet in width, which are well seen at Coonoor.

Three principal systems of faults occur, and these afford evidence of the manner in which the plateau was originally formed. The first of them, to which was due the formation of the Eastern Gháts, has an east-north-east direction, and to it belong the great faults with a down throw to the south-east which have produced the Eastern Gháts and the south-eastern escarpment of the Nilgiris, and likewise those with a north-western down throw which have formed the great escarpments on the north-west side of the Kundahs and at Naduvattam, just above Gúdalúr. The second of the three systems of faults runs nearly at right angles to the first, in a west-north-west direction, and comprises the Western Gháts, the escarpment on the north-east side of the

[1] Mr. Thurston in *Museum Bulletin*, iv, No. 1, 1.

[2] The earliest paper on the subject is that contributed in 1836 by Dr. P. M. Benza, Surgeon to the then Governor, Sir Frederick Adam, to M.J.L.S., iv, pp. 241–99. It contains a map and a sketch of the 'Devil's Gap' near Sispára. This was followed in 1844 by some observations in the Report on the Medical Topography of the hills published by Government in that year; in 1847 by certain remarks in Major Ouchterlony's report on the survey of the district (M.J.L.S., xv); in 1859 by Mr. H. F. Blanford's fuller account in Vol. I of the *Memoirs* of the Geol. Surv. of India, which contains a map, two sketches of the country and several drawings of geological peculiarities; and in 1861 by two papers by Major Congreve in M.J.L.S., xxii. In Vol. XXX of the *Records* of the Geol. Survey are two notes by Mr. T. H. Holland on the olivine-norite dykes of Coonoor. The gold of the South-east Wynaad has a separate literature of its own, which is referred to later.

Kundahs facing Ootacamund and that from St. Catherine's falls to near Kótagiri. The third of the systems is that to which belong the northern boundary of the plateau and the short southern escarpment of the Kundahs.

Thus the first great disturbance which seems to have occurred was the upheaval of the Eastern and Western Gháts and of the Mysore plateau between them, and the second was that which raised the Nilgiri plateau itself, the area affected being partly bounded by pre-existing lines of fracture. The geological periods during which these movements occurred are not ascertainable, there being no sedimentary rocks to give any clue to them.

Considerable reason exists for the belief that the whole of the plateau had been previously submerged by the sea. Not only does it consist chiefly of the undulations and rounded hills which usually result from marine action, but in several places escarpments may be traced which, though now partly cut up into ravines and rounded spurs by the denudation resulting from the heavy rainfall, were apparently formed by oceans washing their bases. On the south-eastern side of the Dodabetta range, overlooking the Kéti valley, is one of these, and another occurs to the north and north-west of Wellington, where, says Mr. Blanford, 'the projecting terminations of several spurs present a striking resemblance to the rocky headlands of parts of the south coast of England.' Several others might be instanced.

The denudation and alteration of the surface of the plateau by the action of rain has been very great—especially on the Kundahs, which receive the full force of the south-west monsoon. The deep ravines by which the chief streams of the country escape to the plains below (for example, the valleys of the Kallár, Coonoor, Kundah and Paikára rivers) have been chiefly formed by the action of these streams themselves, and everywhere the hill-sides are cut into gullies and nullahs. Many of the interior valleys (notably that traversed by the upper waters of the Paikára) seem to have existed even before the plateau was upheaved, as they contain large beds of alluvium deposited by the streams which now drain them. They appear to have originally consisted of lakes, all outlet for their streams being closed by natural embankments. The water in them rose gradually until it overtopped these banks and then, flowing over them, in course of time cut the narrow ravines through which the streams now escape. There are at present no natural lakes in the district, though artificial ones have been made at Ootacamund, at Burnfoot and Lovedale near by, and at Wellington.

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The faces of the cliffs have been altered by the heat of the sun almost as much as by the action of rain. This heat causes the outer layers of rock to expand rapidly and thus to become detached from the cooler underlying mass, and they often eventually split off in enormous slabs slightly curved to the form of the hill-side. Traces of this action may be clearly seen on the escarpment of the Dodabetta range which overlooks the Kéti valley and has already been mentioned. After rain, considerable landslips are occasioned in this manner aided by the action of the water on the decomposed hill-sides. The principal instance within recent memory is the 'Avalanche' referred to on p. 345 below.

The intrusive rocks of the plateau include the olivine-norites already mentioned and a few unimportant cases of basaltic trap in the north and on the western edge of the Kundahs.

Minerals there.

The only minerals of economic value on the plateau are building-stone and laterite. The former is more expensive than brick—bad as are the hill bricks—and is consequently little used. The same applies to the laterite, which is moreover very local in its distribution and is found only in small patches. Some of the ancient cairns referred to in the next chapter are constructed of this material. No limestone exists, and all the lime required for building has to be brought up from the plains. Quartz veins occur, but contain no gold or other metals in sufficient quantities to make them worth extraction. Ancient gold-workings may be traced along the banks of the Lovedale streams, in the valley just south of Bishopsdown at Ootacamund, at Fairlawns (see p. 356), in the Nanjanád valley, and from Parson's valley (where they are very noticeable) at intervals as far as Múkarti Peak. They are sunk in a reef of conglomerate running in schist, instead of the usual gneiss, which seems to pass straight across this part of the plateau. During the gold boom of 1880–82 mines were started near Horashóla, 1½ miles west of Kótagiri, between Kótagiri and Coonoor, and in the latter place; but none of them met with any success. Peat is dug for fuel from the bogs round the towns. Kaolin is common, especially in Ootacamund itself, but it appears to contain too much iron to be of use for making pottery. Ochreous clays (white, yellow and pink) are found and are employed for colour-washing houses. At the 1869 Exhibition at Ootacamund, cups manufactured from them at the Madras School of Arts, and a flower vase made from the white kaolin, were shown. Iron (as hematite, specular iron and magnetic ore) also occurs frequently in small quantities, notably above Horashóla, on a spur of Dodabetta overlooking the dhobis' village at Ootacamund

and at a spot three miles east of Wellington.[1] It has never been worked, and the Kótas, the ironsmiths of the hills, get their raw material from the low country. Mr. Sullivan, the pioneer of the English settlements on the plateau, showed these people how to extract the metal from the local ores, but they declined to make the attempt themselves, urging the stereotyped excuse that their forefathers had never done so.

The Wynaad.

The fundamental rocks of the South-east Wynaad differ sharply from those of the plateau, being typical archæan biotite and hornblendic gneisses, with intrusive bands of charnockite and much younger biotite-granite, pegmatite and basic dolerite dykes.

Minerals there; mica, iron.

In some of the pegmatites good ruby mica of fair size is obtained, and this mineral has been mined at Chérambádi, on the western frontier of the district, by Messrs. Peirce, Leslie & Co. of Calicut and the Indian Glenrock (Wynaad) Co. The output in 1905 was some 5,000 lb. The magnetic iron in the Maruppanmadi range has already been mentioned.

Gold; early explorations.

A series of gold-bearing quartz reefs strike across the Wynaad gneiss. That they contain gold has been known for perhaps two centuries, and as far back as 1793[2] the authorities in Malabar were requested by the then Governor of Bombay (in which Presidency Malabar and the Wynaad were at that time included) to send him all the information which could be collected upon the matter. A similar request was made by the Madras Government in 1828, and in 1831 the Collector reported on the subject at length. He said that the privilege of collecting gold in the Wynaad and in the Nilambúr valley of Malabar just below it had been farmed out for the preceding 40 or 50 years and that the metal was chiefly obtained by washing the soil in stream-beds, paddy-flats and hill-sides. The process was as follows: The earth was generally put into a shallow wooden tray, shaped like a turtle's shell and called a *murriya*. This was submerged in some running stream just

[1] Further details as to locality, etc., will be found in Dr. Benza's paper already quoted, and in Surgeon Edward Balfour's *Report on the Iron ores of Madras* (Madras, 1855), 176 ff.

[2] See the history of the matter (compiled from official sources) in M.J.L.S., xiv (1847), 154–81. Other papers relating to the geology and gold of the Wynaad are Dr. King's preliminary note on the gold-fields in *Records*, Geol. Surv., India, viii, 29 (1875); his note on the progress there, *ibid.*, xi, 235 (1878); Mr. R. Brough Smyth's report of 1879 on the gold mines (Madras Government Press, 1880); Mr. D. E. W. Leighton's *Indian Gold-mining Industry* (Higginbotham, 1883); and Messrs. Hayden and Hatch's paper on the fields in *Memoirs*, Geol. Surv., India, xxxiii, pt. 2 (1891). This last contains nine plates and a detailed bibliography of the subject.

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enough to cause the water to flow over its edges and was then rocked with one hand while the earth in it was gently stirred with the other until all the mud was washed away and nothing left but a black sand containing particles of iron and gold. The *murriya* was next taken out of the stream, one end of it was slightly tipped up, and water was gently poured upon its contents until the gold and iron were separated from the sand. The gold was then collected by rubbing it with a grain or two of mercury and the latter was afterwards driven off from the amalgam so made by the primitive method of wrapping the amalgam in a piece of tobacco leaf and heating it between two lumps of burning charcoal. Sometimes a long trough, called a *páti*, was used to wash away the greater part of the earth, and the operation was only finished in the *murriya*.

About the same time that the Collector wrote this report, a Swiss watchmaker of Cannanore named H. L. Huguenin petitioned the Governor (Mr. S. R. Lushington) to assist him in exploring the mineral resources of Malabar and the Wynaad; and Lieutenant Woodley Nicolson, of the 49th N.I., with a havildar's party of Pioneers, was deputed to assist him. They began their search in 1831 in the neighbourhood of the Dévála already mentioned, but were both quickly prostrated with fever. Descending to the Nilambúr valley, they found a regular set of mines, with shafts from ten to fifty feet deep, worked by 500 or 600 Máppilla slaves belonging to the Nilambúr Tirumulpád (the chief local land-owner) who were required to produce a barley-corn weight of gold per man per diem. At a place called 'Coopal,' further down the valley and near the present Edavanna, were more mines worked by Máppillas, and close under the Wynaad plateau were very many others. In spite of constant fever, which on one occasion nearly cost him his life, and the determined obstruction of the natives, who misled him with false reports and filled up the shafts to prevent their examination, Lieutenant Nicolson reported in such enthusiastic terms upon the capabilities of the mines that Government were induced to order some machinery and pumps to work them. Later on, however, a committee which was appointed to enquire more calmly into the question threw cold water on the whole matter and even on Nicolson's proposal that the Wynaad, which clearly contained the matrix of the gold found in the low country, should be explored. In 1833, therefore, Government dropped the matter; and it slept for over thirty years.

In the sixties of the last century, when the Wynaad had begun to be opened up for coffee estates, the traces of the old gold-workings attracted the attention of the planters, some of whom had

seen the Australian gold-fields. There were the old walls built for 'ground-sluicing,' the remains of the channels led along the hill-sides to wash the earth, great heaps of rubble, the hollows in the rocks where quartz had been broken up, the stones with which it had been pounded, and scores of primitive tunnels and shafts (some of them 70 ft. deep) burrowing into the slopes of the hills. These last are very frequent in the high wooded hill called Shúlimalai, a short distance south of Dévála. A few Kurumbas and Paniyans still subsisted partly by working for gold, though the higher wages obtainable on the estates had well nigh killed the industry.

Prospecting naturally followed the discovery of these signs of gold, and in 1874 was started the Alpha Gold Mining Company (nominal capital, six lakhs), which began operations in a valley about a mile and a half south of Dévála. One of its principal reefs was the well known Skull Reef, so called because the remains of a native miner were found in one of the old workings on it.

In the next year Government deputed Dr. W. King of the Geological Survey to examine the country. His report was favourable. He said :—

'My observations so far appear to show that quartz-crushing should be a success, in the Nambalakód amsham at any rate. Here there are eighteen reefs which are more or less auriferous in themselves, or as to their leaders . . . With machinery and modern appliances, the reefs should pay even if only 3 dwts. of gold are got always from the ton of quartz. The average proportion of gold for fifteen trials on different reefs is at the rate of seven dwts. to the ton; and it is almost certain that many of these would have given a better outturn, could more perfect crushing apparatus have been used at the time.'

Two small companies were started in the next year or two, and in 1878 Dr. King again visited the field. By this time more reefs had been opened out and more extensive sampling was possible, and his views became less sanguine.

Mr. Brough Smyth's report upon it.

In 1879, however, the Government of India employed Mr. Brough Smyth (for many years Secretary for Mines in Victoria and held to be the greatest authority on the subject in Australia) to examine the Wynaad reefs; and his report, written in October 1879, was, to say the least, distinctly encouraging. He discussed in detail the value of a great number of the known reefs, most of which crop out in the country traversed by the road from Nádgáni to Chérambádi; gave the results of assays made by himself and others which ranged from nil to no less than

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204 oz. of gold to the ton of ore; considered that low-grade ores, running even as low as 3 dwts. to the ton, could be worked at a profit; and concluded:—

'The reefs are very numerous and they are more than of the average thickness of those found in other countries; they are of great longitudinal extent, some being traceable by their outcrops for several miles; they are strong and persistent and highly auriferous at an elevation of less than 500 feet above the sea, and they can be traced thence upwards to a height of nearly 8,000 feet; near them gold can be washed out of almost every dish that is dug; the proportion of gold in some of the soils and reefs in the neighbourhood of Dévála is large; and, the country presenting facilities for prosecuting mining operations at the smallest cost, it must be apparent to all who have given attention to this question that sooner or later gold-mining will be established as an important industry in Southern India.[1]

In another place he wrote:—

'It is not unlikely however that the first attempts will fail. Speculative undertakings having for their object the making of money by buying and selling shares are commenced invariably by appointing secretaries and managers at high salaries and the printing of a prospectus. This is followed by the erection of costly and not seldom wholly unsuitable machinery; no attempts are made to open the mine; and then, after futile endeavours to obtain gold, and a waste of capital, it is pronounced and believed that gold-mining on a large scale will never prove remunerative.'

This latter prophecy was fulfilled to the letter: the former was altogether falsified.

The boom of 1880.

The result of this sanguine report was the farcical boom of 1880.[1] The stock markets were ripe for any speculation, however wild. Low rates of return on British Government stocks, a paucity of foreign loans, flourishing trade and an unusual scarcity of gold all contributed to make miscellaneous enterprises more attractive; while coffee-planting was already on the down-grade and owners of estates containing reefs were only too glad to seize a chance of disposing of them at a profit.

The mania began in December 1879, when a company with a capital of £100,000 was launched; and in the next nineteen months the number of companies floated in England amounted to no less than 41 with a capital of over five millions sterling, while during the same period six companies with a total capital of £261,000 were also started in India itself. Of the English companies, 33 went to allotment and the sum obtained by them for investment in the industry amounted nominally to £4,050,000. Of this, however

[1] The account of it which follows is chiefly taken from Mr. Leighton's pamphlet already quoted.

£2,375,500 was allotted for payment for the land in which the supposed mines were located—the prices of this ranged from £70 to no less than £2,600 per acre—so that the sum left for working expenses was not more than £1,674,500. Mr. Brough Smyth himself was appointed manager of two of the companies, but retired on the ground of ill-health in 1882, when the tide had begun to turn.

Such, at first, was the confidence of the public in the venture that by May 1880 the shares of the concerns launched at the beginning of that year were quoted at 50, 75 and even 100 per cent. premium, though the reefs had not been opened out, the machinery had not been shipped and in most cases the mining staff had not even arrived on the ground. The sensational reports which the companies' agents in India, the so-called 'mining experts' and the financial wire-pullers afterwards cabled Home operated to maintain these absurdly inflated prices for more than a year. 'The whole mountain is worth putting through the stamps,' said one wire; 'four feet of magnificent reef, exceedingly rich in gold,' declared another; 'grand discovery; Needle rock reef turning out very rich, heavy gold,' chimed in a third. At the companies' meetings in London, Directors declared that an all-round yield of an ounce a ton was a moderate and calm estimate, and prophesied dividends at rates running up to 50 per cent. It was in vain that respectable journals, like the *Economist* and the *Statist*, deplored the prevailing recklessness; while the fever lasted, the most earnest warnings passed unheeded. Nearly every planter in the Wynaad began to look up the reefs on his estate; 'mining experts' abounded (one of these was a quondam baker and another a retired circus-clown) who reported on properties which sometimes they had never seen (and on one, at least, which did not even exist!) and were often promised a percentage of the price realized; and hordes of financial agents practised the ancient game of drawing up attractive prospectuses, inducing the public to subscribe, forcing up the value of the shares, selling out their own at the top of the market and then hastily quitting the wreck. From little clusters of native huts, Dévála and Pandalúr blossomed suddenly into busy mining centres with rows of substantial buildings, post and telegraph offices, a hotel, a store for the valuable quartz which was to be extracted, a saloon, and numerous mining-captains' bungalows perched on commanding sites. Pandalúr even boasted a well-attended race-meeting on a new course laid out round the paddy-flat there, and the head-quarters of the Head Assistant Magistrate were hastily transferred to this flourishing locality.

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But actual crushing was slow to begin, and in May 1881 confidence began to droop and the prices of the shares were barely maintained. Early in June, however, the market received a sudden reviving impetus owing to the announcement in London that one of the principal mines had begun crushing and that the cabled result showed 4 oz. of gold to the ton. Feverish excitement followed, the Alpha Company's £1 share went up to £15, those of several other ventures changed hands at 400 and 500 per cent. premium, and within a week the appreciation in the value of Wynaad mining scrip had amounted to half a million sterling.

Then came the collapse. In the first week of July the manager of the mine in question explained that the 4 oz. was the yield of one ton only; and that the next 19 tons had given barely 2 dwts. Shares dropped with a run 200 and 300 per cent.—never to recover. Within another year fifteen of the 33 English companies had passed into the hands of the liquidator.

The yields obtained by the others were so poor (up to the first quarter of 1883, 3,597 tons had yielded only 9,641 dwts. of gold, or an average of 2·7 dwts. per ton) that operations were gradually suspended. One mine had spent £70,000 in three years and had only produced 7 oz. of gold. The Phœnix mine was kept open for some time, and is said to have yielded sufficient gold to pay working expenses; but it was eventually shut down by order of Government owing to the frequency of accidents. Work was also carried on in a desultory way in the Alpha Gold Mining Company's property until about 1893.

In 1901–02 a local syndicate re-opened some of the reefs on the Phœnix, Balcarres and Richmond properties in the hope that newer methods of treating low-grade ores (such as the cyanide and chlorination processes) might render the working of the mines profitable; but it eventually abandoned the attempt. The Wynaad ore is not only capriciously distributed but is also intractable, containing much pyrites, sulphur and arsenic, all of which hinder the recovery of its gold.

About the same time, under the orders of the Government of India, Mr. Hayden of the Geological Survey and Dr. Hatch, the Survey's mining specialist, made an examination of certain of the mines to test the belief 'undoubtedly still current in many quarters that the previous failures were in large part due to unsuitable appliances as well as to inefficient supervision.' After many trials, the Phœnix and Alpha mines were selected for detailed experiments and 3,500 feet of the old drives were reopened. Samples were taken systematically every ten feet along

the veins, across their whole width, and assayed in Calcutta; 174 samples from the Alpha mine gave an average of 1·6 dwts. of gold per ton for an average width of 4·3 feet, and 93 samples from the Phœnix gave an average of 2 dwts. for an average width of 5·4 feet. The conclusion arrived at was that 'it is clear that with the methods at present available for the treatment of low-grade ores there is no hope of gold-mining in Wynaad becoming remunerative.'

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The Indian Glenrock (Wynaad) Co. is at present (1906) conducting a further systematic examination of the old native and other workings on the Glenrock property just west of Pandalúr, and round Nelliálam the natives are said still to wash gold on a small scale; but elsewhere on the field all mining is dead and nothing remains but melancholy relics of past activity.

At Pandalúr three or four houses, the old store, and traces of the race-course survive; at Dévála are a grave or two; topping many of the little hills are derelict bungalows and along their contours run grass-grown roads; hidden under thick jungle are heaps of spoil, long-forgotten tunnels used only by she-bears and panthers expecting an addition to their families, and lakhs' worth of rusting machinery which was never erected; while along the great road to Vayitri, which now, except for the two white ruts worn by the infrequent carts, is often overgrown with grass, lies more machinery which never even reached its destination. Moreover, most of the numerous coffee-estates which formerly bordered this road all the way from Gúdalúr to Chérambádi were acquired by the gold companies and thenceforth utterly neglected; and now not a single one of them all is kept up. They have all gone back to jungle and are covered with such a tangle of lantana and forest that it is hardly possible to make out their former boundaries. Thus the coffee industry is dead and the mining industry which killed it is dead also; and this side of the Wynaad is now perhaps the most mournful scene of disappointed hopes in all the Presidency.

FLORA. General remarks.

The Nilgiri hills, having a rainfall of less than 40 inches on some of the driest parts of the eastern side, and of 200 inches on the moistest parts of the western slopes, possess, as might be expected, a very varied and interesting flora, exceedingly numerous in genera and species.[1] With the exception of the dense, evergreen, moist forests on the western sides, the whole area has

[1] The account which follows was contributed to the original *District Manual* by Col. R. H. Beddome, the well-known botanist and Conservator of Forests. The scientific nomenclature, both here and in Appx. I to this chapter, has been kindly corrected by Mr. E. Thurston, Superintendent of the Madras Museum.

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been well explored by botanists, and it is probable that there are few plants now botanically unknown on the plateau and the deciduous forests of the slopes. But the heavy forests of the western sides are of immense extent, very difficult to get at, and very feverish at the lower elevations; and as they contain no habitations or supplies of any sort, the visits of botanists to them have been generally of a flying nature. The trees in these tracts attain an immense size, being often 200 or 250 feet in height, so that it is no easy matter to obtain their flowers; and there can be no doubt that a good many undescribed species still await the botanist. Some of the trees flower in the cold season, some in the hot weather, and some in the rains, while some few are in bloom all the year round; but it is believed that the majority flower between February and the middle of May, which is the most unhealthy time of the year. The shrubs, creepers and herbaceous plants in these tracts are pretty well known, but a careful search at any season of the year would undoubtedly be rewarded by some novelties.

Botanical divisions of the hills.

Botanically we may divide the hills into four tracts, each having a flora of its own, of which very few species encroach upon the other tracts. The working of the various forests in them by the Forest department is referred to in Chapter V.

Deciduous forests on slopes.

First tract.—The deciduous forests of the slopes.—These are of much the same character as the dry forests of the lesser hills and plains of the Presidency. The trees are all more or less deciduous in the dry months of January, February and March, but the forests are never entirely bare, like the woods and forests in Europe in the winter. Many trees, such as the *Erythrinas*, *Butea frondosa*, the three *Dalbergias*, *Schleichera trijuga*, *Stereospermum xylocarpum*, *Odina Wodier*, *Terminalia belerica* and others, burst into flower in February and leaf themselves rapidly afterwards before many other trees have finished shedding their leaves; but still these tracts have a very forlorn appearance at this season, and fire often sweeps through them—greatly to the disgust of the Forest department. Here a very great proportion of the tropical trees of this Presidency are to be met with and, about the lowest portions, very many of the tropical shrubs and weeds which do not belong at all to our alpine flora, such as the weeds amongst *Capparids*, the small milkworts (*Polygalas*), the herbs and shrubs of *Malvaceæ*, the *Grewias* and herbs of *Tiliaceæ*, *Zizyphus* (several species), *Vitis* (several species), *Cardiospermum*, leguminous weeds and herbs, most of the *Cucurbitaceæ*, many of the *Compositæ*, *Convolvulaceæ*, *Scrophulariaceæ*, *Amarantaceæ*, *Commelynaceæ* and a large proportion of the sedges and grasses.

The trees most characteristic of these tracts are as follows :— *Their characteristic trees.*

Dillenia pentagyna.
Cochlospermum Gossypium.
Kydia calycina.
Bombax malabaricum.
Sterculia fœtida, urens, villosa, and colorata.
Eriolœna Hookeriana and quinquelocularis.
Boswellia serrata.
Garuga pinnata.
Cedrela Toona.
Chloroxylon Swietenia.
Elæodendron glaucum.
Schleichera trijuga.
Buchanania latifolia.
Mundulea suberosa.
Butea frondosa.
Dalbergia latifolia and paniculata.
Pterocarpus Marsupium.
Hardwickia binata.
Xylia dolabriformis.
Acacia—many species.
Albizzia odoratissima and amara.
Terminalia tomentosa, paniculata, belerica, and chebula.
Anogeissus latifolius.
Careya arborea.
Lagerstrœmia microcarpa and Flos-Reginæ.
Adina cordifolia.
Stephegyne parvifolia.
Stereospermum xylocarpum
Tectona grandis.
Gmelina arborea.
Phyllanthus Emblica.
Trema orientalis.
Bambusa arundinacea } Bamboos.
Dendrocalamus strictus } Bamboos.

Among these are many of the most valuable timbers of the Presidency, and the following may be said to be the most important :— *And valuable timbers.*

Cedrela Toona (White cedar).
Chloroxylon Swietenia (Satinwood).
Schleichera trijuga (Puva).
Dalbergia latifolia (Blackwood or Rosewood).
Pterocarpus Marsupium (Vengai).
Hardwickia binata (Achá).
Xylia dolabriformis (Irul).
Albizzia odoratissima (Karangalli).
Terminalia tomentosa (Matti).
Lagerstrœmia microcarpa (Venteak).
Tectona grandis (Teak).
Gmelina arborea.
Phyllanthus Emblica (Nelli).
Santalum album (Sandalwood).

Moist evergreen forests of the slopes.

Second tract.—The moist evergreen forests of the slopes.—These are grandest on the western slopes and between 3,000 and 4,000 feet elevation, where the trees often attain 200 and 250 feet in height. They are all evergreen, and their great variety of foliage and colour renders them exceedingly beautiful, some of the young leaves coming out pure white, others a bright crimson, others all possible tints of brown, yellow, red, and green. These tracts are exceedingly moist from the first showers in March till the end of December, and during that season abound with leeches. The trees are often covered with epiphytic orchids, ferns, mosses, balsams, and some *Gesneraceæ*, and there is a glorious profusion of rattans, tree-ferns, climbing ferns, and fine creepers. But what may be said to be most characteristic of these forests is the genus *Strobilanthes* (*Acanthaceæ*), large shrubs, which form the principal underwood and of which 29 species are found on these hills. Some of these flower every year, but others only after a growth of six or seven years, when they die down and renew themselves from seed. Almost all of them have showy flowers,

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and many of these are really beautiful. The two palms *Caryota urens* and *Arenga Wightii* are very conspicuous in these tracts, and so are several specimens of rattan (*Calamus*) and three very fine reed bamboos—*Ochlandra Rheedii*, *Oxytenanthera Thwaitesii* (Munro), and *Teinostachyum Wightii*, a very handsome broad-leaved species, described by Munro as a bambusa from specimens only in leaf. Ferns occur in great profusion, including several tree-ferns, amongst which the *Alsophila crinita* (not yet introduced into English hot-houses and unmatched in any country) is very beautiful. *Sonerilas* and balsams are also numerous. *Guttiferæ*, *Rubiaceæ*, and *Euphorbiaceæ* are the Orders perhaps most copiously represented (next to *Acanthaceæ*), the first by trees, the two last by shrubs and trees.

Above 4,000 feet these forests begin to decrease in size, and towards the plateau they gradually pass into the *shôlas* or woods referred to below.

Their characteristic trees,

The following is a list of the trees most characteristic of the moist forests :—

Polyalthia coffeoides.
Garcinia Cambogia and Morella.
Calophyllum tomentosum.
Mesua ferrea.
Pæciloneuron Indicum.
Dipterocarpus turbinatus.
Hopea parviflora and Wightiana.
Vateria Indica.
Cullenia excelsa.
Leptonychia moaccuroides.
Chickrassia tabularis.
Canarium strictum.
Aglaia Roxburghiana.
Beddomea indica and simplicifolia.
Gomphandra axillaris and polymorpha.
Euonymus indicus and angulatus.
Lophopetalum Wightianum.
Harpulia cupanoides.
Acrocarpus fraxinifolius.
Humboldtia Brunonis and Vahliana.
Saprosma fragrans, Wightii, and glomerata.
Bassia elliptica.
Pajanelia Rheedii.
Myristica laurifolia and attenuata.
Alseodaphne semicarpifolia.
Actinodaphne salicina.
Cryptocarya Wightiana.
Actephila excelsa.
Agrostistachys longifolia and indica.
Baccaurea courtallensis.
Ostodes zeylanica.
Adenochlæna indica.
Bischoffia javanica.
Hemicyclia venusta.
Artocarpus hirsuta.
Gironniera reticulata.
Laportea crenulata.

And timbers.

The timbers, as a rule, are not of such good quality as those in the deciduous forests, but some are valuable, especially the following :—

Calophyllum tomentosum (Poon spar).
Mesua ferrea (Ironwood).
Hopea parviflora.
,, malabarica.
Chickrassia tabularis (Chittagong wood).
Acrocarpus fraxinifolius (Red cedar or Shingle tree).
Diospyros ebenum (Ebony).
Artocarpus hirsuta (Angelli or Aynee).
Gironniera reticulata (Kho mongee).

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On the Malabar side of the district these moist forests reach right down to the plains, just as they do in parts of South Canara, Coorg, and Travancore. Elsewhere they give way at 1,000 or more feet from the base to deciduous forests or tracts composed of nothing but reed bamboos (*Teinostachyum Wightii*).

The shólas or woods of the plateau.

Third tract.—The shólas or woods of the plateau.—These are very similar in character to the moist evergreen forests of the slopes, but from being at a higher elevation the trees are of different genera and species and their growth is much smaller, 70 feet being much beyond the average height.

They are all evergreen, and the tints from the new growth at certain seasons are very beautiful. *Myrtaceæ*, *Lauraceæ*, and *Styraceæ* are the Orders most represented by trees, and the undergrowth is chiefly composed of *Rubiaceous* shrubs and *Strobilanthes* (*Acanthaceæ*).

Their characteristic trees.

The following are the principal trees growing in these shólas :—

Michelia Nilagirica.
Hydnocarpus alpinus.
Gordonia obtusa.
Elæocarpus oblongus, tuberculatus and ferrugineus.
Melicope Indica.
Heynea trijuga.
Gomphandra axillaris.
Apodytes Benthamiana.
Ilex Wightiana and denticulata.
Euonymus crenulatus.
Microtropis ramiflora and densiflora.
Turpinia pomifera.
Meliosma Arnottiana and pungens.
Photinia Notoniana and Lindleyana.
Eugenia—many species.
Pentapanax Leschenaultii.
Polyscias acuminata.
Heptapleurum racemosum.
" rostratum.
" venulosum.
" obovatum.
Viburnum punctatum, erubescens, hebanthum, and coriaceum.
Vaccineum Leschenaultii, and Nilgiriense.
Sideroxylon tomentosum.
Symplocos—many species.
Lasiosiphon eriocephalus.
Machilus macrantha.
Phœbe Wightii.
Cinnamomum Zeylanicum, *var.* Wightii.
Litsœa Wightiana.
Litsœa Zeylanica.
Glochidion—several species.

And timbers,

The timbers are of much less value than in either of the other tracts. The following are those chiefly in use :—

Hydnocarpus alpinus.
Gordonia obtusa.
Ternstrœmia japonica.
Elæocarpus oblongus.
Ilex Wightiana.
Eugenia—several species.
Euonymus crenulatus.

And ferns and mosses.

Ferns and mosses abound. Amongst the former *Alsophila latebrosa*, a tree-fern, is abundant. Orchids are very poorly represented. There is one species of reed bamboo (*Arundinaria Wightiana*) and some shrubby balsams and begonias, and the

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following herbaceous plants may be enumerated as characteristic :—

Desmodium Scalpe.	Halenia Perottetii.
Crotalaria barbata.	Pogostemon rotundatus.
Fragaria indica and nilgerrensis.	,, speciosus.
Sonerila speciosa.	Gerardinia Leschenaultii.
Hydrocotyle javanica.	Elatostema diversifolia.
Sanicula europæa.	,, sessile.
Senecio corymbosus.	Pilea Wightii.
Chrysogonum heterophylla.	Chamabainia cuspidata.

The grass-land of the plateau.

Fourth tract.—The grass-land of the plateau.—This tract is covered with many short, coarse species of grass which are quite burnt up with the frost and sun in December and January. After the first showers in March the growth is very rapid, and numerous herbaceous plants spring up. The following are the most characteristic :—

Anemone rivularis.	Pimpinella Leschenaultii.
Ranunculus reniformis.	Heracleum ringens.
,, diffusus.	Anaphalis—several species.
,, Wallichianus.	Gnaphalium hypoleucum.
Viola serpens.	,, marcescens.
Impatiens Beddomii.	Senecio—several species.
,, Chinensis.	Gentiana quadrifaria.
,, inconspicua.	Swertia corymbosa.
,, tomentosa.	,, minor.
Crotalaria formosa.	Micromeria biflora.
Indigofera pedicellata.	Brunella vulgaris.
Flemingia vestita, *var* nilgheriensis.	Pedicularis Perottetii.
Potentilla Kleiniana.	,, Zeylanica.
,, Leschenaultii.	Satyrium Nepalense.
,, supina.	,, Wightianum.
Drosera Burmanni.	Habenaria—many species.
,, indica.	Lilium Nilgiriense.
,, peltata	Pteris aquilina (bracken).
Sonerila grandiflora.	Gleichenia dichotoma.

Its characteristic shrubs,

Trees are only sparsely scattered about these tracts. These consist chiefly of *Rhododendron arboreum, Salix tetrasperma, Celtis tetrandra, Pittosporum,* two species, *Dodonæa viscosa, Wendlandia Notoniana.* The following are the most characteristic shrubs :—

Berberis nepalensis.	Cassia tomentosa (imported).
,, aristata.	Rubus lasiocarpus.
Hypericum mysorense.	,, ellipticus.
,, Hookerianum.	,, moluccanus.
Eurya japonica.	Rosa Leschenaultiana.
Indigofera pulchella.	Cotoneaster buxifolia.
Desmodium rufescens.	Rhodomyrtus tomentosa.
Atylosia Candollei.	Osbeckia Gardneriana.
Sophora glauca.	,, Wightiana.
Cassia Timoriensis.	Hedyotis Lawsoniæ.

Hedyotis stylosa.
,, articularis.
,, fruticosa.
,, pruinosa.
Lobelia excelsa.
Gualtheria fragrantissima.
Ligustrum Perottetii.
,, robustum.
Jasminum revolutum.
Clerodendron serratum.
Leucas—several species.
Elœagnus latifolia.
Strobilanthes sessilis.
,, sessiloides.
,, Kunthianus.

This last is often gregarious and covers several acres in extent, and when out in flower is one sheet of blue. It is the plant which has been supposed to have originated the name 'Blue Mountains.' The three blackberries (*Rubus*) are common, and they and the stretches of bracken and the clumps of fern give many spots a strikingly English appearance which appeals strongly to exiles on their first visit to the Nilgiris.

And beautiful plants.

The following may be enumerated as the most beautiful plants found in these hills :—

Fagræa obovata (Slopes).
Rhododendron arboreum (Plateau).
Ceropegia Decaisneana (Sispára ghát).
,, elegans (Coonoor).
Exacum Perottetii (,,).
Œgenetia pedunculata (Northern slopes).
Impatiens acaulis (Sispára ghát).
,, rivalis.
,, Denisonii (Sispára ghát).
,, Munroni (,,).
,, Jerdonii (,,).
,, maculata (Paikára).
,, latifolia } Kótagiri and
,, fruticosa } Coonoor.
Vigna Wightii (Northern slopes).
Bauhinia Phœnicea (Sispára ghát).
Osbeckia Gardneriana (Plateau)
,, Wightiana (,,).
Sonerila grandiflora (Avalanche).
,, speciosa (Ootacamund).
,, elegans (Sispára ghát).
,, versicolor (,,).
,, axillari (,,).
Passiflora Leschenaultii (Coonoor).
Pavetta siphonantha (Sispára ghát).
Saprosma fragrans (,,).
Hamiltonia suaveolens (Sígúr ghát).
Vaccinium Leschenaultii (Plateau).
,, nilgiriense (,,).
Lysimachia japonica (,,).
Symplocos pulchra (Sispára ghát).
Jasminum humile (Plateau).
Alstonia venenatus (Coonoor ghát).
Beaumontia Jerdoniana (Northern slopes).
Hoya pauciflora (Sispára ghát).
Boucerosia diffusa } (Foot of hills,
,, umbellata } southern).
Porana racemosa (Western slopes).
Rivea tiliæfolia } (Foot of hills
Ipomea campanulata } and western slopes).
Argyreia splendens (Western slopes).
,, speciosa (,,).
Ipomea vitifolia (Southern slopes).
Solanum ferox (Northern slopes).
,, Wightii (Coonoor).
Torenia asiatica (Sispára ghát).
Pedicularis Perottetii (Sispára).
Æschynanthus zeylanica (Sispára ghát).
Klugia Notoniana (Coonoor ghát).
Pajanelia Rheedii (Western slopes).
Thunbergia Hawteyniana (Kótagiri).
,, Mysorensis } (Western
,, Wightii } slopes).
Strobilanthes gossypinus (Sispára).
,, luridus (Naduvattam).
,, tristis (Sispára ghát).
,, sexennis (Ootacamund).
,, pulcherrimus (,,).
,, paniculatus (Western slopes).
,, violaceus (Sispára).
Barleria involucrata (Coonoor ghát).
Hedychium coronarium (Western slopes).
Alpinia Rheedii (,,).
Musa ornata (,,).
Gloriosa superba (Southern slopes).
Lilium nilgiriense (,,).

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All the above are well worthy of introduction into gardens and hot-houses. The orchids are very poor compared to those of the Himalayas and Burma, but the following are well worthy of cultivation :—

Dendrobium aqueum (Western slopes).	Vanda spathulata (Northern slopes).
Cœlogyne—all the species (Plateau).	" Roxburghi (").
Arundina bambusifolia (Western slopes).	Ærides crispum (Western slopes).
Ipsia Malabarica (").	" Lindleyana (Kátéri and Coonoor).
Cyrtoptera flava (").	Calanthe masuca (Plateau in shólas).
" fusea (").	Platanthera Susannæ (Western slopes).

One hundred and seventy-eight species of ferns have been detected on these hills, and probably others only known from other districts will yet be discovered on the western slopes. Two of these ferns, *Lastræa scabrosa* and *ferruginea*, are not, it is believed, found elsewhere.

Books of reference.

In Appendix I to this chapter is given a complete catalogue of the flowering plants, ferns, and mosses of the Nilgiris as at present known. The descriptions are to be found in a collected form in *The Flora of British India* by Dr. Hooker. The student may also consult Wight and Arnott's *Prodromus* and De Candolle's *Prodromus* for most of the plants; for the orchids, Dr. Lindley's *Genera and Species Orchidaceæ* and his papers in the Linnæan Journal; for the grasses Kunth's *Enumeratio Plantarum* and Steudel's *Syn. Pl. Gram.*; and for the mosses the works of Müller and Mitten.

Very many of the flowering plants are figured in Dr. Wight's *Icones Plantarum* and *Spicilegium Neilgherrense*, of which the titles are the only parts which are in Latin. The latter contains over 200 coloured plates. Most of the trees and shrubs, or at least one or more of each genus, are illustrated in Colonel Beddome's *Flora Sylvatica*, and all the ferns in Colonel Beddome's *Ferns of Southern India* and *Ferns of British India*, all of which works are to be found in the Ootacamund Library.

Introduced plants.

The Appendix does not include introduced plants. The Australian *Eucalypti* and *Acacias* have given quite a new character to Ootacamund and Coonoor, in and about which they have been planted very largely for firewood. The Forest department has put down several hundred acres of *Eucalyptus globulus*, the blue gum of Tasmania, and there are also extensive plantations of *Acacia melanoxylon* (the blackwood) and *dealbata* (wattle). Their somewhat gloomy foliage has hardly improved the appearance of the stations, but in defence of them it may be pleaded that they have solved the difficult problem of the supply of fuel. Were

they less ubiquitous, the blackwood would be admired for its handsome shape and the play of light and shade among its thick foliage; the wattle would be forgiven many of its sins for its annual blaze of sulphur-yellow blossoms; and even the blue gum would be tolerated in the dusk with the evening light behind it, when its graceful outline is noticeable but not its dreary colouring.

Besides the blue gum, numerous species of eucalyptus have been introduced from Australia, amongst which *E. sideroxylon* (the iron bark), *E. obliqua* (stringy bark), *E. fissilis* (mess-mate), *E. viminalis* (manna gum), *E. amygdalina* (the gigantic box-gum), *E. rostrata* (the red gum), *E. ficifolia* (the red-flowered gum), besides many other Victorian species, may be mentioned as doing well. Some West Australian varieties, such as *E. marginata* (the jarrah or mahogany tree, the wood of which stands exposure to sea-water and in Australia is much in use for jetties, ship-building, railway sleepers, etc.) and *E. calophylla*, have been introduced and will grow with care; but they do not stand the frost when young, and have to be carefully covered up in December, January, and February until they attain certain dimensions.

Very many of the Australian acacias, besides the two above mentioned, have been introduced and ornament the gardens and roads, etc. Among them are *Acacia homolophylla* (the myall or violet wood), *A. pycnantha*, *A. salicina*, *A. decurrens*, *A. cultriformis*, *A. dodonæifolia*, *A. elata*, *A. longifolia*, *A. saligna*, *A. pulchella*, besides many others.

Many other Australian trees and shrubs have also been introduced into gardens on the plateau, amongst which are many species of *Hakea*, *Grevillea* and *Banksia*, *Casuarina quadrivalvis* and *suberosa* (the she-oak and he-oak), *Pomaderris* (three species), *Myoporum insulare*, *Pittosporum* (two species), *Melaleuca* (several species), *Leptospermum* (several species), *Callistemon* (two species), *Beaufortia*, *Kunzea*, *Calothamnus*, *Angophora*, *Tristania*, etc. Many of the *Coniferæ* have also been introduced from the Himalayas, Japan, and other countries, the most successful of which are *Cupressus macrocarpa*, *Lawsoniana*, *torulosa*, *sempervirens* and *Cashmeriana*, *Araucarias Bidwillii* and *Cunninghami*, *Criptomeria Japonica*, *Frenela species* and *Pinus insignis*, *pinaster* and *longifolia*.

Some of the European pines, such as the larch and Scotch fir (*P. laricio* and *P. sylvestris*), and some of the Himalayan *Abies* have quite failed to grow, and (probably owing to the want of a regular winter) the oak does indifferently and the elm, birch and most other European deciduous trees refuse to make any growth at all.

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The mangosteen fruits well in the Government garden at Barliyár, about 2,500 feet in elevation on the south-eastern slopes, where also the nutmeg of commerce, the clove, the cocoa, cinnamon, allspice, mahogany, camphor, breadfruit, litchi, durian and vanilla thrive luxuriantly. Experiments made with European fruit-trees are referred to in Chapter IV.

In the gardens of the plateau most of the flowers found in English gardens and green-houses are to be met with. The growth of fuchsias, geraniums, and heliotropes is so luxuriant that they are often made into hedges. The yellow gorse and the broom have been introduced and are prominent round about the stations.

ZOOLOGY. Domestic animals; Cattle.

The bullocks and cows met with on the hills are all animals imported from the low country, and there are no indigenous breeds. The buffaloes kept for their milk by the pastoral tribe of the Tódas are, however, very different from those of the plains below, being bigger and more strongly built and having huge horns which rise in a wide curve above their heads instead of running in an almost straight line along either side of their bodies, as elsewhere. They are not, however, so powerfully and thickly built as the famous draught-buffaloes of Ganjám and Vizagapatam. Their ferocity is proverbial, and the combined charge of a herd of them down a steep hill with a bog at the bottom of it is unpleasant to encounter, even if one is mounted.

Cattle disease, especially murrain, is commonest in the dry weather, when the herds are crowded together owing to the scarcity of pasture. The Kótas, the artisan tribe of the hills, doubtless help to spread it by their habit of carrying off and keeping the hides of animals which have died of it.

Endeavours to breed foreign cattle on the hills have met with little success. English cattle were tried [1] at the experimental farm which was started at Kéti by Mr. S. R. Lushington in 1830 (see p. 202), but none of them seem to have survived. Several short-horn bulls have been imported from Australia (the earliest, apparently, by General Morgan in 1862) and their progeny may still be seen in Ootacamund. In 1880 some of the well-known Amrat Mahál animals from Mysore were entrusted to the Lawrence Asylum authorities, but by 1884 all but two had died. There seems to be a peculiar lack of nourishment in the natural grasses of the plateau (due, it is conjectured, to the low percentage of lime in the soil); from December to February the absence of rain, combined with frosts at night and a hot sun by day, kills down all the pasture and necessitates stall-feeding; and during the south-west

[1] Jervis' *Narrative of a journey to the Falls of the Cauvery* (London, 1834), 46.

monsoon the bitter wind and ceaseless rain on the exposed hills speedily kill animals which are not acclimatized and sheltered in sheds.

Sheep.

Foreign sheep suffer from these same disadvantages. Southdowns were tried at the Kéti farm[1] but seem to have died out; in 1851 fifty half-bred merinos were sent up from Mysore, but soon died; in 1860 a Mr. Rae imported some China sheep from Shangai, General Morgan had a large flock of them for years, and many of the breed are still to be seen;[2] and a cross between China and Leicester sheep was introduced but did not succeed. For flavour of meat and early maturity these last left nothing to be desired, but from want of fresh blood the flock became delicate, and many lambs were lost from inflammation of the lungs brought on by continued exposure to cold during the monsoon.[3] Some English sheep reared at the Lawrence Asylum were more fortunate and weighed as much as 80 lb. (after cleaning) when killed.[4]

Pigs.

The Berkshire pig crossed with the China breed has succeeded admirably, but Nilgiri bacon and hams have never been a success, the absence of true winter weather preventing proper curing.[3]

Horses and ponies.

A miserable breed of pack-ponies is raised on the plateau by the natives. A private horse-breeding establishment at Masinigudi, on the lower ground to the north, has met with some success. Mule-breeding has been tried by a company at Ánaikatti in the same neighbourhood, but has recently been abandoned.

Game animals.

The game animals of the district include the elephant, tiger, leopard and Indian (sloth) bear, the sambhar, spotted, barking, four-horned, and mouse deer, antelope, bison, pig, 'Nilgiri ibex' and wild dog, besides hares and the fast and sturdy hill jackal which is the quarry of the Ootacamund Hunt.

Elephants.

Elephants may be said never to visit the plateau itself nowadays, though sixty years ago they now and then came up to the Kundahs to escape the fiery heat below.[5] They still often stray from the Satyamangalam hills to the jungle round about Méttupálaiyam, but in former days they were common in those parts and one fine morning[6] 'an officer was compelled to fly as fast as his horse could carry him, with his horsekeeper

[1] Jervis' book, 45.

[2] Sir Frederick Price's *Ootacamund, a history*, Madras, 1908.

[3] General Morgan's paper in the *District Manual*, 479.

[4] Asylum's report for 1885–86.

[5] *Goa and the Blue Mountains* by Lieut. Richard Burton, afterwards Sir Richard and author of the famous edition of the *Arabian Nights* (Bentley, 1851), 317.

[6] Jervis, 37.

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[6] Jervis, 87.

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and grass-cutter clinging to its tail,' to escape a charge by one of them. So troublesome were the animals, indeed, that about 1840 the Collector of Coimbatore obtained a party of elephant hunters from Chittagong and employed them for some years in catching the herds in kheddahs. They used also to be exceedingly common in the Ouchterlony Valley, but the opening up of this tract to coffee cultivation has driven them away. Their chief haunt in the district at present is the belt of forest below the north side of the plateau (round about Masinigudi and Ánaikatti) and the Wynaad. There they are still so numerous as to be sometimes a serious nuisance to travellers and cultivators. Many cases have occurred in recent years of cartmen travelling along the two roads running from Mysore to Sígúr and to Gúdalúr being held up by a herd of the brutes, and at the last revenue settlement of the Wynaad the immense damage they did to paddy-flats was urged by the Collector as a reason for leniency in the assessments proposed. Elephants also come down the Bhaváni valley in the north-east monsoon as far east as Tai Shóla.

Tigers.

Tigers occur all over the district, both on the lower levels and on the plateau. They are commonest on the latter from March to June, when the heat and the forest fires drive them up from below. General Douglas Hamilton mentions [1] seeing five of them (two full-grown and three younger ones the size of large leopards) all together on one occasion near 'Ounamund' (apparently what is now called 'One mand') shóla. In 1903 a sportsman at Naduvattam succeeded in killing, one after the other, four which had gone down into a deep ravine after a dead pony. Not long ago one was caught in the Ouchterlony Valley in a barbed wire running noose fastened to two trees, which had been set by Kurumbas for sambhar; but after terrific struggles succeeded in breaking two of the wires and getting away with the loss of a great deal of hair and blood.

In the Wynaad the Wynaadan Chettis (the chief landowning class), aided by the Paniyans (their field-labourers), make a

[1] See his *Records of Sport in Southern India* (London, 1892), 203. He had a shooting-hut in a small shóla about half way between the Paikára travellers' bungalow and the Liddellsdale estate, to the right of the bridle-road, which was a famous sporting rendezvous in his time and the remains of which are still visible. Other books describing sport on the Nilgiris include *Game* by 'Hawkeye' (his brother, Gen. Richard Hamilton), a series of letters originally contributed in 1870 to the old *South of India Observer* and published at Ooty in 1876; Col. Walter Campbell's *The Old Forest Ranger* (London, 1853) and *My Indian Journal* (Edinburgh, 1864); Mr. G. Royal Dawson's *Nilgiri Sporting Reminiscences* (Madras, 1880); and Sir Frederick Price's *Ootacamund, a history* (Madras, 1908).

practice of netting both leopards and tigers whenever they get a chance. In most houses a length or two of stout net is kept, and when a tiger kills and lies up in a convenient bit of jungle word is quickly passed round and the nets are produced and joined together. The occasion is a general tamasha, the women collecting in their smartest toilettes and the owner of the bit of jungle keeping open house. Prayers for success are offered to the various neighbouring deities and one or more of the priests usually eventually work themselves up into a prophetic frenzy and foretell the success of the venture. The nets are then arranged in the form of a V round the spot where the tiger is lying up. Armed with long twelve-foot spears and directed by Paniyans up trees, the men next gradually drive the tiger up into the point of the V, and finally by degrees close up the opening so that the animal is entirely encircled.

Protected by the spearmen, the bolder spirits then get under the nets and cut away the jungle so that the circle can be gradually narrowed, and the frequent charges of the tiger against the barrier are repulsed with shouts, clubs and the long spears. That night, fires are lit all round the enclosure and the party remains on guard, singing songs and recounting stories. In the morning half a dozen Paniyans march round the enclosure three times with spears and all kinds of music, stopping at intervals to shout challenges to the tiger to come out. The nets are thereafter gradually closed in day after day until the tiger, half dead with thirst and constant harrying, is at last speared to death. His body is pulled out and (after a scramble to secure the whiskers, which are potent protectors against all evil spells) is propped up on a horizontal pole, as if still alive. The tip of the tongue and of the tail are cut off and burnt lest magicians should secure them for working black magic, and eventually the skin is borne off to the taluk office and the Government reward is claimed. In former, and less practical, days it used to be left to rot where it hung.

Leopards and bears.

Leopards, like tigers, are common in all parts of the district. So many cases of black leopards are reported that there is some ground for supposing that they are commoner on the hills than in the plains. Bears are seldom seen on the plateau itself but are frequent on the slopes and in the lower country. According to 'The Old Forest Ranger,' they were formerly numerous in the Orange Valley.

Deer.

Sambhar are also found all over the district wherever there is suitable cover, and on the plateau the favourite stalking-ground is the Kundahs, where the protection afforded by the Game

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Association has resulted in a marked increase in their numbers. The heads do not run as large as in North India, the record being 42 inches measured from burr to tip along the curve. Three heads of this size have been shot—one by General Douglas Hamilton in the sixties, one by Colonel Hadfield about the same time, and the third by the latter's son Mr. Edward Hadfield at Ebbanád in 1905. The earliest European arrivals on the hills used to call these animals 'elk', whence the Elk Hill at Ootacamund.

Spotted deer never come to the higher levels and are commonest round Masinigudi. The barking, or rib-faced, deer (muntjac) still go by the old incorrect name of 'jungle-sheep' which was given them by the earliest visitors to the hills. Like the sambhar, they often prove too strong a temptation for the more riotous of the Ootacamund hounds. Four-horned deer are uncommon. The little mouse deer only lives in the thick jungle on the slopes and is very rare.

Antelope are only found round Sígúr and in small numbers.

Bison.

Now and again a stray specimen or two of the bison or gaur (called 'the wild bull' in the old days) finds its way from the Satyamangalam hills to the jungle round Méttupálaiyam, but as a rule they are only met with round Masinigudi and in the great Benne and Mudumalai forests in the north of the Nilgiri Wynaad. Rinderpest has more than once committed havoc among them. Bison are never seen nowadays on the plateau, but *My Indian Journal* (p. 374) mentions that one was once shot on the Kundahs; General Douglas Hamilton killed another near Pírmand there in 1866[1]; and the 'Bison Swamp' not far from that spot must have originally been so named from its connection with these animals.

Pig.

Pig are numerous. As the country is nowhere rideable, they are allowed to be shot. Now and again the Ootacamund hounds have rioted after one and, as fox-hounds do not tackle, the rushes of an old boar at bay have proved most disastrous. On one recent occasion thirteen hounds were more or less severely cut

The Nilgiri ibex.

The Nilgiri ibex (*Hemitragus hylocrius*, really a wild goat) is perhaps the most interesting of the game animals of the plateau as it belongs to a strictly Indian genus the only other species in which is the tarh of the Himalayas; occurs nowhere in the world outside the Madras Presidency; and, with the exception of an ibex on the higher mountains of Abyssinia, is the only goat living south of the north temperate zone. When Europeans first came to the hills it was unknown to science and was

[1] P. 260 of his book already quoted.

commonly called 'the chamois.' It is not, as its name would imply, peculiar to the Nilgiris, but is found all along the Western Gháts to the southwards (including the Ánaimalais and Palnis) as far as Cape Comorin. In this district it lives only on the plateau and is commonest on the precipitous southern and western sides of the Kundahs. Its arch-enemy is the leopard. Though the horns are not impressive trophies (the record head, shot many years ago by Mr. Rhodes Morgan at Tarnot Mand near Glen Morgan, measured 17½ inches along the outer curve) they are valued for the difficulty in obtaining them occasioned by the extreme wariness of their possessor and the dangerous nature of the ground on which he lives. In 1875 a Mr. Butcher was killed by falling down a precipice on the Paikára side of the hills when after ibex, and lies buried in St. Stephen's churchyard.[1]

Wild dog.

As in many other places, the wild dogs are the greatest foe of the deer tribe, hunting them in packs relentlessly. They appear to come and go in accordance with no clear reasons, being frequent one year and scarce the next. This year (1906) they swarm along the western side of the Kundahs and sambhar are correspondingly scarce. Luckily they seem to be liable to some infectious disease which periodically reduces their numbers. In 1893 nine were found dead in the jungles round Sígúr, all wasted and thin from disease, and three more near Nellakóttai in the Wynaad.

The Game Association.

The shooting country in the district is very small, and the number of sportsmen has always been large; and soon after the first regular occupation of the plateau by Europeans, fears began to be expressed that the game would shortly be all killed out, more especially as public opinion did not then, as now, condemn the slaughter of females, immature males and stags in velvet.

The letters written in 1870 by 'Hawkeye' (General Richard Hamilton) to the old *South of India Observer* at length called attention to the matter; Lord Napier, the then Governor, evinced much interest in it; in 1877 a Game Association was founded to take action; and the eventual result was the passing of the Nilgiri Game and Fish Preservation Act II of 1879, which provides for the establishment of a close season for game animals and birds of certain specified kinds, gives power to frame rules to regulate fishing and shooting, and lays down penalties for violation of its provisions. It does not apply to the Wynaad, shooting and fishing in which are governed by rules under the Forest Act.

[1] See Mr. G. R. Dawson's book already quoted, p. 11, and Mr. Butcher's tombstone. He is said to have been knocked off a ledge by a wounded buck which tried to bolt back past him.

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Since then, armed with the powers conferred by various notifications under this Act, the Nilgiri Game and Fish Preservation Association, of which the Collector is *ex officio* President, has done much to save the existing game from over-shooting and something to introduce new game birds and fish. Among other things, close seasons have been established within certain classes of forest reserves and grazing-grounds for certain large and small game and fish; watchers have been appointed to check the native pot-hunter and rewards paid for the killing of wild dogs and other animals and birds destructive to game; a fee (Rs. 30) for shooting and fishing licenses has been prescribed; the killing of the females of certain game, of hornless males, stags in velvet, sambhar with heads under 26 inches and spotted stags under 22 inches has been prohibited and the maximum number of sambhar and ibex to be shot by each license-holder fixed; the eggs of jungle-fowl and peafowl are protected; the catching of fish by poison, dynamite, traps etc. is forbidden; and certain shólas have been closed to beating and others to all shooting, and certain waters closed against all fishing.

The smaller mammals.

In Appendix II to this chapter is given a list of the mammalia found on the Nilgiris.[1] In addition to the game animals referred to above, a few of these deserve a word or two of special mention. The Nilgiri langur, *Semnopithecus johnii*, commonly known as the black monkey, lives in the quieter shólas on the plateau and does not go down to the low country. Its beautiful coat, which is long, glossy and black except for a reddish-brown portion on the head and nape, leads to its being much shot by the natives, who have not here the usual religious objection to killing monkeys.

The lion-tailed monkey, *Macacus silenus*, chiefly inhabits the dense and remote forest on the western side of the plateau and is seldom seen. It has a black coat with a tuft at the end of its tail, and surrounding its face is a reddish-white ring of hair which gives it a very antiquated and venerable expression.

Only three kinds of bats have so far been reported. The hedge-hog, which is chiefly found on the eastern and lower slopes, is the ordinary South Indian variety. Two *mustelidæ* occur, namely, the Indian marten and the clawless otter. The latter is abundant in the streams and is most destructive to fish, and the Game Association pays rewards for its destruction.

[1] This and most of the notes which follow are taken from Surgeon-Major Bidie's contribution to the original *District Manual*. Mr. E. Thurston, Superintendent of the Madras Museum, has been kind enough to correct the nomenclature in Appendices II–V.

The felines include, besides the tiger and the leopard, the leopard-cat, the jungle-cat, the common tree cat (Indian Palm-civet) and a larger species which Surgeon-Major Bidie thought was the *Paradoxurus Zeylanicus*, var. *fuscus*, of Kelaart, but which is not noticed by Jerdon and up to then had not been regarded as a native of Southern India. The exceeding commonness of these various kinds of cats may be judged from the fact that from 1895 to 1906 the Game Association paid rewards for killing 939 of them. CHAP. I. ZOOLOGY.

Three kinds of mungoose occur on the hills, namely, the stripe-necked, the ruddy and the Nilgiri brown variety. Some hundreds of these have also been killed for the sake of the rewards put upon their heads.

Of the seven species of squirrels, the Nilgiri striped squirrel is peculiar to the hill ranges of Southern India and Ceylon, but a nearly allied (if not identical) species, the *Sciurus insignis* of Horsfield, is found in Java. The beautiful Malabar squirrel occurs in the Wynaad. The flying squirrel, which inhabits dense forests low down on the western slopes, is nocturnal and thus seldom seen.

The rats include the mole rat, which does much damage to turf by burrowing underneath it, chewing up the roots and throwing up in heaps the earth excavated from its tunnels; and the bush or coffee rat, also common in Ceylon, which is so called because at certain seasons it appears in great numbers and nibbles off the young branches of the coffee trees and eats their flowers.

The porcupine of the hills is the usual variety. He does much damage in gardens, being especially fond of potatoes, and has now developed a keen liking for young rubber plants. He also occasionally proves himself an unpleasant antagonist to any of the Ootacamund hounds which riot on the strong scent he carries.

The Ootacamund Hunt.

The history of the Ootacamund Hunt is so fully detailed in Sir Frederick Price's forthcoming book that only the shortest reference to it is here necessary. The first regular pack of fox-hounds was started by Lieutenant (afterwards Sir Thomas) Peyton about 1845 but was sold in 1846 on the ground that the country was unrideable! From 1854 until the Mutiny broke out and interfered, the 74th Highlanders kept a pack at Wellington which hunted one day a week at Ootacamund; and from 1859 to 1863 the 60th Rifles at the same cantonment maintained a bobbery pack which came over now and again. In 1864 and 1865 the Madras hounds came up for the season, and rather desultory hunting

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occurred in the years immediately following. At last, in 1869, Mr. J. W. Breeks, the first Commissioner of the Nilgiris, got together the first regular pack, and then began the connection with the Hunt of the well-remembered Colonel 'Bob' Jago, then in charge of the forests of the district, who was the real father of the Hunt and whose portrait now hangs in the Club. Mr. Breeks died in 1872 and his successor Mr. Cockerell (known to his friends as 'Cockey,' and the name-father of 'Cockey's Course' on the Downs) became Master. Colonel Jago, who had been on leave, returned in 1874 and was elected Master and Huntsman. He resigned the post in 1887, when he retired. Since then the Hunt has gone from strength to strength and nowadays has always 30 couple of hounds in kennel and a subscription list of Rs. 15,000. The reservation in 1896, when Lord Wenlock was Governor, of the 30 square miles of grass and shóla lying immediately west of Ootacamund and officially called 'the Wenlock Downs,' has not only preserved for ever a much-needed tract of grazing-land, but has provided the Hunt with a 'home country' the like of which no other pack in India can boast.

The birds of the district are more numerous and more varied at the lower levels, from 2,000 to 4,000 feet above the sea, than on the plateau itself.[1] During the worst of the south-west monsoon many of them migrate to the eastern side of the hills to avoid the heavy rain. In Appendix III to this chapter is given a list of the chief species found in the district, the nomenclature and classification being those given in the Fauna of British India. Unhappily no connected account of them has ever been written, and it is to be hoped that some one may arise to do for them what Wight did for the flowers and plants of these hills.

Of the *Raptores*, or birds of prey, the largest are the two vultures—the long-billed brown variety and the white scavenger. Both are fairly common and are said to breed on the hills. The Game Association offers rewards for the slaying of several of the more destructive of the falcon family and also of the crow-pheasant, and a fair number are killed annually. Rarer migrant *Raptores* include the peregrine (*Falco peregrinus*, Gm.), he pale harrier (*Circus Macrurus*, S.G. Gm.) and the marsh harrier (*C. æruginosus*, Lin.); and the common buzzard (*Buteo desertorum*, Daud.) and the white stork (*Ciconia alba*, Bech.) have

[1] Most of the following notes are taken from Surgeon-Major Bidie's account in the original *District Manual*.

also been seen.[1] Ten species of owls occur and, as elsewhere in South India, are regarded by the natives as birds of ill-omen. The swallow family are also well represented. The edible-nest swiftlet breeds in the cave in Tiger Hill at Ootacamund above the toll-bar at the top of the ghát road to Coonoor. The nests consist of a frame-work of grey lichen, glued together with inspissated mucus. Bee-eaters, king-fishers, horn-bills and parakeets are each represented by two species, the beautiful blue-winged parakeet being especially noticeable in the Wynaad; there are as many as eight of the handsome woodpecker family, eight cuckoos occur, four shrikes and numerous fly-catchers, thrushes (several of which are migrants from the north and some of which sing as well as the English variety), babblers, bulbuls, and warblers. Some of the tree-warblers, though they do not look like birds capable of long flights, breed in Kashmir and the Himalayas and even in Central Asia and Siberia.

The game birds include two kinds of green pigeon, the Imperial pigeon and the Nilgiri wood-pigeon, peafowl on the lower levels, the grey jungle-fowl, spur-fowl, two kinds of quail, snipe and woodcock. The two last arrive between the end of September and the beginning of November and there is some competition to secure the first cock of the season. The woodcock resemble their English cousins in their peculiar fondness for haunting exactly the same spot year after year. Snipe feed in the bogs on the plateau, but they are not plentiful and a bag of eighteen couple is apparently the record for one gun. Practically all of them are of the pintail variety.

The Game Association has made many fruitless efforts to introduce exotic game birds. Chikór, English, Himalayan and Chinese pheasants, partridges from the plains, black partridges from North India, red jungle-fowl and guinea-fowl have all been tried in turn without success; and in 1896 the Association decided to abandon further attempts and devote all its energies to the introduction of exotic fish into some of the many excellent streams on the plateau.

Fish.

These streams contain only two indigenous fish; namely, a stone-loach and a small variety rarely exceeding $3\frac{1}{2}$ inches in length which Dr. Francis Day, the fish-expert, named *Danio Nilgiriensis* and which is commonly called a minnow. The streams below the plateau are, however, much better supplied. Dr. Day

[1] This and one or two other facts below are taken from a note on the migratory birds of the Nilgiris by Mr. W. Davison, F.Z.S., kindly lent by Mr. E. Thurston.

stated [1] that in a stream on the Cleveland estate, about ten miles below Kótagiri and 3,500 feet above the sea, he found the 'Indian trout' (*Barilius rugosus*, Day), which is really a carp and grows to about six inches in length; and a little lower down, at an elevation of about 3,000 feet, a small carp (*Puntius Grayii*, Day) and a little loach (*Nemachilus Guentheri*, Day). In the Sígúr river he found the Carnatic carp [*Puntius (Barbus) Carnaticus*, Jerdon], two other loaches—*Nemachilus semi-armatus*, Day, which grows to six inches in length, and *N. Denisonii*, Day—*Danio aurolineatus*, Day, which is about five inches long, a fine minnow (*Rasbora Nilgiriensis*, Day) which is said to attain eight inches and breeds rapidly, *Garra gotyla*, Ham. Buch. and *Discognathus Jerdoni*, Day, which are abundant and run up to six inches, the Indian trout again and the small murrel, *Ophiocephalus gachua*, Ham. Buch.

In the Bhaváni the species were far more numerous, and Dr. Day captured those shown in the margin. Of these, the striped murrel (*O. striatus*) grows to about three feet in length, is thought good eating by Europeans and natives and is also found in tanks and wells. The orange murrel (*O. Marulius*) attains the same size but is only found in rivers. The murrel have hollow heads wherein they are able to retain water and so can live a considerable time out of their native element. The small murrel (*O. gachua*) is only about a foot long but bears transporting better than the other two. The Carnatic carp runs up to 25 lb. in weight and occurs in regular droves, but is almost too bony for the table.

Ophiocephalus Marulius, Ham. Buch.
„ *striatus*, Bloch.
„ *gachua*, Ham. Buch.
Mastacembelus armatus, Lacep.
Notopterus Pallasii, Cuv. and Val.
Hemibagrus punctatus, Jerdon.
Hypselobagrus cavasuis, Ham. Buch.
Wallago attu, Bloch.
„ *Malaborici*, Cuv. and Val.
Glyptosternum Lonah, Sykes.
Nemachilus Guentheri, Day.
„ *Denisonii*, Day.
Garra gotyla, Ham. Buch.
Discognathus Jerdoni, Day.
Labeo kontius, Jerdon.
Labeo Dussumieri, Cuv. and Val.
Labeobarbus tor, Ham. Buch.
Puntius gracilis, Jerdon.
„ *dubius*, Day.
„ *Carnaticus*, Jerdon.
„ *Grayii*, Day.
„ *filamentosus*, Cuv. and Val.
Barbus arulius, Gunther.
Amblypharyngodon Jerdoni, Day.
Rasbora woolaree, Day.
Barilius rugosus, Day.
„ *cocsa*, Ham. Buch.
Danio aurolineatus, Day.
„ *elegans*, Day.
Esomus Maderaspatensis, Day.
Chela argentea, Day.
Belone cancila, Cuv. Buch.
Muræna maculata, Ham. Buch.

[1] *Madras Quarterly Journal of Medical Science*, xii, 55.

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Poaching on the Bhaváni.

The mahseer (*Barbus mosal*, Cuv.) in the upper waters of the Bhaváni, especially near where the Kundah and Síruváni rivers join the main stream, used to afford first-class sport. The biggest fish on record (caught by Mr. H. P. Hodgson) weighed 74 lb., Mr. 'Nick' Symons captured another of 72 lb., and several over 60 lb. were killed. But of late years the natives have killed thousands of this and the other Bhaváni fish by various poaching tricks. In the hot weather, when the water is low, they dynamite the pools in which the fish have taken refuge, poison them with lime and with barks which stupefy them and cause them to float on the surface, set bamboo traps for them across the natural ladders up the falls, and catch them by setting night lines consisting of a small fish hooked through the back and tied to the whippy end of a branch of an overhanging tree which automatically plays, until it is tired out, any fish which takes the bait.

The big fish run up the river to the spawning-beds (which are in the uppermost waters, amid the dense jungle above Attapádi village) during the monsoon floods and attempt to return when the river begins to fall again. It is then that the jungle men put forth all their energies to capture them. They build across the river, especially in places where the stream is broken up by islands, great barriers made of plaited bamboo through which no fish of any size can pass, and in the middle of these they leave a single opening in which they insert a bamboo trap something like an English eel-trap. Very few fish ever get past these contrivances. Even more harm is done by the poaching which is practised just below the spawning-beds. There the methods adopted are similar, but more thorough. The barriers are made of stones packed with leaves and branches and are quite impassable; and the bamboo traps are so closely woven that not even the smallest fry can get through them. Thousands upon thousands of the tiniest fish are thus killed in their attempts to follow their natural instinct to descend the river, and the jungle men themselves admit that the supply of them has in consequence enormously decreased in recent years.

Experiments with exotic fish.

The first attempt to import exotic fish to the waters of the upper plateau appears to have been the stocking of the tank at Billikal on the edge of the plateau above Sígúr. In this, Sir William Rumbold, then owner of the neighbouring bungalow, put fish from the plains about 1830. In 1844 Mr. Martelli, who was then the owner, put in other fish from the Sígúr river, among which were some Carnatic carp which grew afterwards to

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5 lb. in weight.[1] The first attempt to introduce European fish into the plateau was made in 1863,[2] when about 500 trout (apparently brown trout) ova were sent out from England. They were not kept sufficiently cool and all died before they reached Ceylon.

In 1866 Dr. Day made a far more earnest attempt with about 6,000 more ova of the same kind at the cost of the Madras Government. The ova were packed in ice, kept in the ship's ice-room (nine tons of Lake Wenham ice were sent to Suez specially for the experiment), carefully guarded against vibration in the trains by being slung from the roofs of the carriages, and carried up from Coimbatore (the then terminus of the railway) with every precaution to a masonry hatching-house which had been specially built for them according to Dr. Day's directions in the Government Gardens at Ootacamund. The ova had stood the journey fairly well, the percentage of dead ranging only from 10 to 20, but owing to the high temperature of the water in the hatching-house, the impossibility of getting water quite clear of fine silt and the attacks of several kinds of water insects, not one hatched out.[3]

Dr. Day next directed his attention (in the same year 1866) to bringing up fish from the rivers of the plains. He had them caught in the Bhaváni and established a stock-pond at Woodcot in Coonoor to break the long journey. Constant supervision was necessary, as the coolies employed to bring them up were both careless and cunning. One of their tricks was to lighten the barrels and chatties by emptying them of their water as soon as they were out of sight of Méttupálaiyam and filling them up again just before they reached Coonoor—the inevitable result being the death of all the fish in them. Dr. Day eventually succeeded in transporting to the Ootacamund lake, the Paikára river, the Sígúr river and the ponds in the Government Gardens, 16 eels, 28 Carnatic carp, two orange murrel, 10 striped murrel, 149 small murrel (*O. gachua*), and 116 other fish including *Labeo Dussumieri*, *Rasbora Nilgiriensis*, *Danio aurolineatus*, *Barilius rugosus*, *Puntius gracilis* and *P. filamentosus*. In July 1867 Dr. Day netted the Government Gardens ponds and found that the *Danio aurolineatus* and the *Rasbora* had bred and that the *Barilius* were healthy. He

[1] Dr. Day's article in *Madras Quarterly Journal of Medical Science*, xii. The dates and names he gives are in some cases inaccurate, and have been corrected.

[2] Dr. Day's article.

[3] An interesting and detailed account of the whole experiment from start to finish will be found in Dr. Day's report printed in G.O., No. 650, Public, dated 28th June 1866, and an abstract of it in his paper in the *Mad. Quart. Journ. Med. Sci.* already cited.

also obtained six Gurami (a Chinese fish which the French had introduced in Mauritius) which he put in the Ootacamund lake. Nothing has since been heard of these last.

At the end of the same year Mr. W. McIvor, Superintendent of the Government Cinchona Plantations, reported to Government that he had brought out from Europe, on his return from leave, 15 lake trout fry, 10 carp, 24 tench, 12 rudd, 12 silver eels and three gold-fish, that he had put them into the hatching-house built in the Government Gardens for Dr. Day's trout ova and that they were alive and healthy. The methods he had adopted [1] were to keep the fry at first for some three months in an aquarium with a strong flow of water (gradually diminished) passing through it, to accustom them to artificial conditions, and then to place them in a series of small metal tanks suspended one above the other in a wooden framework which could be slung when on board to mitigate the effect of the vessel's motion. From each tank the water flowed through a tap to the one below, so that the water in all of them was constantly aërated.

In 1869 Mr. McIvor reported that the fish had been transferred to the Government Gardens ponds; that the trout, tench and rudd had spawned and that there were from 200 to 300 young fry one or two inches in length of each of the two former kinds and three dozen of the last. Government sanctioned money for distributing these fish among the waters of the plateau and in the same year Lady Napier and Ettrick, wife of the then Governor, put the first lot into the Ootacamund lake. Mr. McIvor subsequently reported [2] that with the remainder he had stocked all the waters on the Nilgiris, including the Kundahs. He said that the trout (which had been placed by themselves in the Paikára, Avalanche and 'Múkarti' rivers, and also with other fish in the Ootacamund, Burnfoot and Lovedale lakes) had not done well; that the fry of the others had escaped down the lake weir into the Sandy Nullah stream, where tench, carp and rudd (but no trout) had been caught in hundreds for months past with small-meshed nets by the natives; and that fifty had been captured so far down as the pool below the Kalhatti fall. He begged for the protection of the fish from the natives, who caught even the smallest of them and wantonly destroyed those which they could not eat. A municipal bye-law was framed accordingly.

[1] They are described in detail, with illustrations, in his report printed in G.O., No. 2262, Revenue, dated 5th August 1869, which is partly reprinted in the original *District Manual*, pp. 167–70.

[2] His letter in G.O., No. 899, Revenue, dated 23rd August 1873.

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Of the trout, some were said[1] to have been afterwards caught in a stream near Naduvattam and six (at the end of 1875) near the Paikára bungalow.[2] Doubts having been expressed as to whether these fish had really bred as supposed in hill waters, one of the latter was sent to Mr. H. S. Thomas in spirits and was eventually identified by the Linnæan Society as a Loch Leven trout. Mr. Thomas subsequently put some *Labeo calbases* and *L. nigrestis* in a pond in the Adderley estate, but they got into the coffee-pulper and were killed. In 1877 Mr. Wapshare and Mr. Hubert Knox put into the Paikára some carp caught in the Hope river in the Ouchterlony Valley. In 1879 Mr. Barlow, then Commissioner of the Nilgiris, reported that mahseer had also been put into the Paikára (when and by whom he did not say) but that the natives frustrated all such experiments by netting the river as soon as it was low. Nothing seems to have been done to stop this wholesale destruction until 1884, when the Game Association and the Collector reported that dynamiting and netting with small-mesh nets were daily increasing in frequency. A notification was then issued under the Act II of 1879 above referred to prohibiting these and other similar practices in the chief lakes and rivers of the plateau.

As far as can be gathered, the net result of all these numerous experiments is that the Ootacamund lake, which was recently specially netted by the authorities to ascertain what fish it held, is full of small tench and carp of different kinds (which are caught in hundreds by natives with rods) and contains a few *Barilius*; and that in the fine pools in the Paikára river round about the travellers' bungalow are large quantities of carp which take a fly unwillingly and are almost too bony to be eaten. The largest of these last on record weighed 7 lb. and was caught by Captain Beadnell.

Later on the success of an attempt by Mr. Marsh to import and hatch trout ova led in 1893 to the Game Association endeavouring to do likewise. The first lot of 40,000 ova were put into the ice-room of the steamer and, of course, were frozen to death at once. The next lot (20,000) arrived in March, the hottest time of the year, and nearly all died in consequence. For the reception of future consignments, a fry pond and a stock pond were made in the Marlimand plantation near Snowdon House, and an elaborate series of seven fry ponds and a stock pond at Paikára. Mr. Rhodes Morgan, the Association's honorary secretary, took immense interest in the matter. The two Snowdon

[1] The original *District Manual*, 165.

[2] Mr. H. S. Thomas' *The Rod in India* (London, 1881), 192. Mr. Hodgson possesses some trout fry about five inches long, preserved in spirits, which Mr. McIvor said were bred in Ootacamund by him.

ponds were also afterwards utilized and a hatchery was made in the shóla to the east of them. Between 1893 and 1897 a series of consignments of trout ova of various kinds (the English *Salmo Levenensis* and *fario* and the American *fontinalis* and *irridens*, or rainbow trout) were imported and hatched with varying success and put out to the number of many hundreds in the Paikára, Avalanche, Emerald valley and Kundah rivers, in the Burnfoot lake, the Marlimand and Dodabetta reservoirs and the Snowdon ponds.[1] Except in the Snowdon ponds and the Emerald valley stream (in which latter Major T. N. Bagnall killed in 1902 one weighing as much as 7 lb.) nothing was ever seen of any of these afterwards. It seemed clear that though the fish put down lived and throve in some cases, the temperature of the water was too high for them to breed in successfully, for when this rises above 60° F. the ova of both brown and rainbow trout hatch out so quickly that the alevins are too weak to survive.

Interest in the matter gradually waned, but in 1904 another 20,000 ova of the rainbow trout, which can stand somewhat higher temperatures than the brown variety, were imported and 875 fry raised from these were turned down in the Parson's valley stream. In July 1906 the Ceylon Fishing Club allowed their expert, Mr. H. C. Wilson, to bring over 100 yearlings of the same variety. These travelled safely as far as Erode, but there the train bringing a fresh supply of ice was late and they suffered severely. Eventually 27 survived the journey and were put out in the Parson's valley stream. This water was subsequently searched and fished from the Krúrmand crossing upwards, and the rainbow trout then seen and caught (one was 14 inches long) proved beyond dispute that some of the fry put down in 1904 had bred there and that this fish can at last be said to be established on the plateau. The stream contains an abundant food-supply and the high fall just below the Krúrmand crossing prevents the carp from the Paikára, lower down, from coming up to interfere with the trout.

Government have now obtained the services of Mr. Wilson to report on the measures necessary to check the indiscriminate slaughter of fish in the upper waters of the larger rivers of the district and to stock these with rainbow trout and other suitable fish. He has found that the native poachers on the Bhaváni (the account of whose methods given above is partly taken from his reports) are rapidly emptying that river of all its fish; proposes to improve the spawning-beds on the Parson's valley stream by gravelling them and planting shade round them; has added to the scanty supply of fish food in the Avalanche stream

[1] Details will be found in the Association's printed annual reports.

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by putting down mollusca there; is remodelling the Snowdon hatchery on modern lines; and is importing rainbow trout ova to be hatched there. He considers that of the many streams on the plateau the Billitháda halla (which rises in the big hills just west of the Avalanche bungalow and is one of the chief sources of the Bhaváni) is perhaps the most suitable for stocking. It contains excellent spawning-grounds and a large supply of fish food, and its temperature is unusually low.

Reptiles.

In Appendix IV to this chapter is given a list [1] of the reptiles—lizards, snakes and frogs—as yet detected in the district. Of the venomous snakes, only two—*Trimeresurus strigatus* and *Callophis nigrescens*—usually ascend to the plateau, and they appear to be confined to the western and northern sides of it and to have never been met with near Ootacamund or Coonoor. *Trimeresurus anamallensis* and *Ancistrodon hypnale* are common in the moist forest and in coffee estates on the slopes. *Naia bungarus* (the hill, or king, cobra) and the three species of *Callophis* are very rare. *Naia tripudians* (the cobra), *Bungarus cœruleus* (the krait) and *Vipera Russellii* (the chain, or Russell's, viper) are common only about the foot of the hills. The last has once or twice been encountered near the top of the plateau. The little *Echis* (the carpet snake) is very numerous in rocky ground but not at any height. It is doubtful whether the *Halyso Elliotii* (Tropidonotus plumbicolor) is really a Nilgiri snake. Probably further species remain to be detected on the western slopes of the plateau.

Shells.

In Appendix V is a list [2] of the land and fresh-water shells of the district. The grand *Helix ampulla* and the fine *Cyclophorus Nilgiricus* are only found in the moist forest on the western slopes at from 3,000 to 4,000 feet. Both are very rare in collections and of considerable value. *Diplommatina*, *Jerdonia*, *Craspedotropis*, *Opisthostoma*, *Cyclophorus Shiplayi*, and some of the *Cyathopomas*, *Streptaxis*, many small *Helices* and some of the *Achatinas* abound in the shólas of the plateau. *Helix Maderaspatana* is common on the grass land there, sometimes in association with *Helix Nilagirica* and *Bulimus Nilagiricus*. The three species of *Pterocyclos* are found at or near the foot of the hills, and most of the *Cyclophori* in the woods on the slopes (Sispára, Coonoor, and Sígúr gháts). There are very few fresh-water shells. *Neritina Perotetiana* occurs in some rivers on the plateau, and *Paludina Bengalensis*, *Planorbis exustus*, and *Ampullaria globosa* are found in tanks.

[1] Prepared for the original *District Manual* by Colonel R. H. Beddome, then Conservator of Forests, and corrected by Mr. Thurston. The notes which follow are also the former's.

[2] Also prepared by Colonel Beddome for the original *District Manual* and corrected by Mr. Thurston. Reference may also be made to the paper by Messrs. W. T. and H. F. Blanford in J.A.S.B., xxix (1860), 117–27.

APPENDIX I.

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APPENDIX I.

List of the flowering plants, ferns, and mosses found on the hills.

DICOTYLEDONS.

RANUNCULACEÆ.

Clematis smilacifolia, *Wall.*
" Gouriana, *Roxb.*
" Wightiana, *Wall.*
Naravelia zeylanica, *DC.*
Anemone rivularis, *Ham.*
Thalictrum Javanicum, *Bl.*
Ranunculus reniformis, *Wall.*
" diffusus, *DC.*
" Wallichianus, *Wight.*

DILLENIACEÆ.

Dillenia indica, *L.*
" bracteata, *Wight.*
Dillenia pentagyna, *Roxb.*

MAGNOLIACEÆ.

Michelia Champaca, *L.*
" nilagirica, *Zenk.*
Kadsura Wightiana, *Arn.*

ANONACEÆ.

Uvaria zeylanica, *L.*
Artabotrys zeylanicus, *H. f. et T.*
Unona pannosa, *Dalz.*
Polyalthia coffeoides, *Benth. et Hk. f.*
" fragrans, *Benth. et H. f.*
" cerasoides, *Benth. et H. f.*
" Korinti, *Benth. et H. f.*
" suberosa, *Benth. et H. f.*
Phœanthus malabaricus, *Bedd.*
Goniothalamus wynaadensis, *Bedd.*
Miliusa indica, *Lesch.*
" nilagirica, *Bedd.*
Saccopetalum tomentosum, *H. f. et T.*
Alphonsea lutea, *H. f. et T.*
" madraspatana, *Bedd.*
Orophea Thomsoni, *Bedd.*
Bocagea Dalzellii, *H. f. et T.*

MENISPERMACEÆ.

Tinospora malabarica, *Miers.*
" cordifolia, *Miers.* Tonic and diuretic.[1]
Anamirta cocculus, *W. et A.* Poisonous; used as ointment.
Tiliacora racemosa, *Colebr.*
Cocculus macrocarpus, *W & A.*
Cocculus villosus, *DC.*
Stephania rotunda, *Lour.*
" hernandifolia, *Walp.*
Cissampelos Pareira, *Linn.*
Cyclea peltata, *H. f. et T.*

BERBERIDEÆ.

Berberis nepalensis, *Spr.*
Berberis aristata *DC.* Tonic and febrifuge; yields a yellow dye.

PAPAVERACEÆ.

Argemone mexicana, *L.* Fresh juice used for muscular pains; oil of seeds employed in skin diseases.

[1] This and the other notes regarding the properties and uses of the plants are taken from the paper contributed to the original *District Manual* by Surgeon-Major Bidie, M.B., then in charge of the Madras Government Museum.

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FUMARIACEÆ.

Fumaria parviflora, *Lamk.*

CRUCIFERÆ.

Nasturtium officinale, *Br.* This and the next yield edible cresses.
Nasturtium indicum, *DC.*
Cardamine africana, *L.*
Cardamine subumbellata, *Hook.*
" hirsuta, *L.*
Capsella Bursa-pastoris, *Mœnch.*
Lepidium sativum, *L.*

CAPPARIDEÆ.

Cleome monophylla, *L.*
" viscosa, *L.*
Gynandropsis pentaphylla, *DC.* Juice of leaves a rubefacient.
Niebuhria linearis, *DC.*
Cratæva religiosa, *Forst.*
Cadaba indica. *Lamk.*
Capparis grandiflora, *Wall.*
Capparis zeylanica, *Linn.*
" divaricata, *Lamk.*
" aphylla, *Roth.*
" Roxburghii, *DC.*
" grandis, *L. f.*
" horrida, *L. f.*
" tenera, *Dalz.*

VIOLACEÆ.

Viola Patrinii, *DC.*
" serpens, *Wall.*
Ionidium suffruticosum, *Ging.*

BIXINEÆ.

Cochlospermum Gossypium, *DC.*
Scolopia crenata, *Clos.*
Flacourtia montana, *Grah.*
Flacourtia sepiaria, *Roxb.*
Hydnocarpus Wightiana, *Bl.*
" alpina, *Wight.*

PITTOSPOREÆ.

Pittosporum tetraspermum, *W & A.*
" nilghirense, *W. et A.*
Pittosporum floribundum, *W. et A.*

POLYGALEÆ.

Polygala arillata, *Hom.*
" javana, *DC.*
" leptalea, *DC.*
" persicariæfolia, *DC.*
" erioptera, *DC.*
" elongata, *Klein.*
Polygala chinensis, *L.*
" sibirica, *L.*
" telephioides, *Willd.*
Salomonia oblongifolia, *DC.*
Xanthophyllum flavescens, *Roxb.*

CARYOPHYLLEÆ.

Silene gallica, *L.*
Cerastium indicum, *W. et A.*
" vulgatum, *L.*
Stellaria paniculata, *Edg.*
Stellaria uliginosa, *L.*
Arenaria neelgerrensis, *W & A.*
Spergula arvensis, *L.*
Drymaria cordata, *Willd.*
Polycarpæa spicata, *W & A.*

PORTULACACEÆ.

Portulaca oleracea, *L.* Leaves of this and the next are eaten as greens.
Portulaca Wightiana, *Wall.*
Talinum cuneifolium, *Willd.*

ELATINEÆ.

Elatine americana, *Arnt.*
Bergia ammannioides, *Roxb.*
Bergia verticellata, *Willd.*

HYPERICINEÆ.

Hypericum mysorense, *Heyne*.
" Hookerianum, *W. et A.*
" humifusum, *L.*
Hypericum napaulense, *Choisy*.
" japonicum, *Thunb.*

GUTTIFERÆ.

Garcinia Cambogia, *Desrouss.* This and the next yield gamboge, a drastic purgative and pigment.
Garcinia Morella, *Desrouss.*
" ovalifolia, *Hook f.*
Calophyllum tomentosum, *W.*
Calophyllum Wightianum, *Wall.*
" Walkeri, *Wight.*
Mesua ferrea, *Linn.*
Pœciloneuron indicum, *Bedd.*

TERNSTRÖMIACEÆ.

Ternströmia japonica, *Thunb.*
Eurya japonica, *Thunb.*
Gordonia obtusa, *Wall.*

DIPTEROCARPEÆ.

Dipterocarpus turbinatus, *Gært.* The gurjun balsam ; oil used in leprosy.
Ancistrocladus Heyneanus, *Wall.*
Vatica Roxburghiana, *Bl.*
Shorea Talura, *Roxb.*
Hopea parviflora, *Bedd.*
" Wightiana, *Wall.*
" Malabarica, *Bedd.*
Vateria indica, *L.* Yields white dammer allied to copal.

MALVACEÆ.

Malva verticillata, *L.*
Sida humilis, *Willd.*
" mysorensis, *W. et A.*
" spinosa, *L.*
" carpinifolia, *L.*
" rhombifolia, *L.*
" cordifolia, *L.*
Abutilon asiaticum, *G. Don.*
" indicum, *G. Don.*
" graveolens, *W. et A.*
" crispun, *G. Don.*
" neilgherrense, *Munro.*
Urena lobata, *L.*
" sinuata, *L.*
" repanda, *Roxb.*
Pavonia glechomifolia, *A. Rich.*
" odorata, *Willd.*
Decaschistia trilobata, *Wight.*
Decaschistia crotonifolia, *W. et A.*
Hibiscus Solandra, *L'Her.*
" canescens, *Heyne.*
" lunariifolius, *Willd.*
" panduræformis, *Burm.*
" vitifolius, *L.*
" cannabinus, *L.* Deccan hemp ; yields good fibre.
" angulosus, *Mast.*
Thespesia Lampas, *Dalz. and Gibs.*
Kydia calycina, *Roxb.*
Bombax malabaricum, *DC.* Gum astringent ; fruit yields silk-cotton.
Eriodendron anfractuosum, *DC.* Ovaries used as condiments ; yields gum and silk-cotton.
Cullenia excelsa, *Wight.*

STERCULIACEÆ.

Sterculia fœtida, *L.* Seeds yield oil and are eaten ; bark aperient.
Sterculia urens, *Roxb.*
" villosa, *Roxb.*
" guttata, *Roxb.*
" colorata, *Roxb.*
Helicteres Isora, *L.*
Pterospermum Heyneanum, *Wall.*
Pterospermum glabrescens, *W. et A.*
Eriolæna Hookeriana, *W. et A.*
" quinquelocularis, *Wight.*
Melhania incana, *Heyne.*
" cannabina, *Wight.*
Melochia corchorifolia, *L.*
Waltheria indica, *L.*
Leptonychia moacurroides, *Bedd.*

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TILIACEÆ.

Grewia columnaris, *Sm.*
,, emarginata, *W. et A.*
,, populifolia, *Vahl.*
,, salvifolia, *Heyne.*
,, orbiculata, *Rottl.*
,, tiliæfolia, *Vahl.*
,, pilosa, *Lam.*
,, villosa, *Willd.*
,, multiflora, *Juss.*
,, lævigata, *Vahl.*
,, abutilifolia, *Juss.*

Triumfetta pilosa, *Roth.*
,, rhomboidea, *Jacq.*
,, rotundifolia, *Lam.*
Corchorus olitorius, *L.*
,, trilocularis, *L.*
Elæocarpus oblongus, *Gærtn.* Kernels of seeds are eaten like almonds.
Elæocarpus tuberculatus, *Roxb.*
,, rugosus, *Roxb.*
ferrugineus, *Wight.*
,, Munronii, *Mast.*

LINEÆ.

Linum mysorense, *Heyne.*
Reinwardtia trigyna, *Planch.*
Hugonia Mystax, *L.*
Erythroxylon monogynum, *Roxb.*

MALPIGHIACEÆ.

Hiptage Madablota, *Gærtn.*

GERANIACEÆ.

Geranium nepalense, *Sw.*
Oxalis corniculata, *Linn.*
Biophytum polyphyllum, *Munro.*
Impatiens acaulis, *Arnott.*
,, Beddomei, *Hk. f.*
,, Levingei, *Gamble.*
,, modesta, *Wight.*
,, Denisonii, *Bedd.*
,, Lawsoni, *Hk. f.*
,, orchioides, *Bedd.*
,, Jerdoniæ, *Wight.*
,, chinensis, *L.*
,, diversifolia, *Wight.*
,, Kleinii, *W. & A.*
,, tenella, *Heyne.*
,, inconspicua, *Benth.*

Impatiens oppositifolia, *Linn.*
,, tomentosa, *Heyne.*
,, Gardneriana, *Wight.*
,, Leschenaultii, *Wall.*
,, latifolia, *L.*
,, cuspidata, *Wight.*
,, floribunda, *Wight.*
,, lucida, *Heyne.*
,, scabriuscula, *Heyne.*
,, dasysperma, *Wight.*
,, Munronii, *Wight.*
,, Hensloviana, *Arn.*
,, fruticosa, *DC.*
,, campanulata, *Wight.*
,, Goughii, *Wight.*
,, maculata, *Wight.*

RUTACEÆ.

Evodia Roxburghiana, *Benth.*
Melicope indica, *Wight.*
Zanthoxylon ovalifolium, *Wight.*
,, tetraspermum, *W. et A.*
,, Rhetsa, *DC.*
Toddalia aculeata, *Pers.* Roots yield yellow dye and their bark is a stimulant and febrifuge.
Acronychia laurifolia, *Bl.*
Glycosmis pentaphylla, *Corr.*
Murraya exotica, *L.*
Clausena Willdenovii, *W & A.*
Limonia acidissima, *L.* A very acid lime.

Limonia alata, *W. et A.*
Luvunga eleutherandra, *Dalz.*
Paramignya monophylla, *Wight*
Atalantia monophylla, *Corr.*
,, racemosa, *W. et A.*
,, ceylanica, *Oliv.*
Citrus Aurantium, *L.* The orange.
Feronia Elephantum, *Corr.* Pulp is eaten; half-ripe fruit astringent.
Ægle Marmelos, *Corr.* Bael-fruit; green fruit used in dysentery; rind yields yellow dye.

SIMARUBEÆ.

OCHNACEÆ.

Ochna squarrosa, *L.*
Gomphia angustifolia, *Vahl.*

BURSERACEÆ.

Boswellia serrata, *Roxb.*
Garuga pinnata, *Roxb.*
Balsamodendron Berryi, *Arn.*
Protium caudatum, *W. et A.*
Canarium strictum, *Roxb.*

MELIACEÆ.

Naregamia alata, *W. et A.*
Munronia Wallichii, *Wight.*
Melia Azadirachta, *L.* Margosa; seeds yield oil.
Melia Azedarach, *L.* Leaves contain green colouring matter.
Cipadessa fruticosa, *Bl.*
Dysoxylum malabaricum, *Bedd.*
Aglaia Roxburghiana, *Miq.*
Lansium anamalayanum, *Bedd.*
Amoora Rohituka, *W. et A.*
Walsura piscidia, *Roxb.*
Heynea trijuga, *Roxb.*
Beddomea indica, *Hook f.*
,, simplicifolia, *Bedd.*
Soymida febrifuga, *Adr. Juss.*
Chickrassia tabularis, *Adr. Juss.*
Cedrela Toona, *Roxb.*
Chloroxylon Swietenia, *DC.*

CHAILLETIACEÆ.

Chailletia gelonioides, *Hook f.*

OLACINEÆ.

Olax Wightiana, *Wall.*
Cansjera Rheedii, *Gmel.*
Opilia amentacea, *Roxb.*
Gomphandra axillaris, *Wall.*
,, polymorpha, *Wight.*
Apodytes Benthamiana, *Wight.*
,, Beddomei, *Mast.*
Mappia fœtida, *Miers.*
Sarcostigma Kleinii, *W. et A.*

ILICINEÆ.

Ilex malabarica, *Bedd.*
,, denticulata, *Wall.*
Ilex Gardneriana, *Wight.*
,, Wightiana, *Wall.*

CELASTRINEÆ.

Euonymus indicus, *Heyne.*
,, crenulatus, *Wall.*
,, serratifolius, *Bedd*
,, angulatus, *Wight.*
Glyptopetalum grandiflorum, *Bedd.*
Microtropis latifolia, *Wight.*
,, ramiflora, *Wight.*
,, densiflora, *Wight.*
,, microcarpa, *Wight.*
,, ovalifolia, *Wight.*
Lophopetalum Wightianum, *Arnt.*
Pleurostylia Wightii, *W. et A.*
Celastrus paniculata, *Willd.* Oil of seeds used in beri-beri.
Gymnosporia emarginata, *Roth.*
,, montana, *Roxb.*
Elæodendron glaucum, *Pers.*
Hippocratea obtusifolia, *Roxb.*
Salacia prinoides, *DC.*
,, oblonga, *Wall.*

RHAMNEÆ.

Ventilago madraspatana, *Gærtn.* Root-bark a valuable dye.
Ventilago bombaiensis, *Dalz.*
Zizyphus Jujuba, *Lamk.* The jujube-fruit; bark used by dyers.
Zizyphus glabrata, *Heyne.*
,, nummularia, *W. et A.*
,, Œnoplia, *Mill.*
,, xylopyrus, *Willd.*
Zizyphus incurva, *Roxb.*
,, horrida, *Roth.*
,, rugosa, *Lamk.*
Rhamnus Wightii, *W. et A.*
Scutia indica, *Brongn.*
Sageretia oppositifolia, *Brongn.*
Colubrina asiatica, *Brongn.*
Gouania microcarpa, *D.C.*

AMPELIDEÆ.

Vitis quadrangularis, *Wall.*
" repens, *W. et A.*
" discolor, *Dalz.*
" adnata, *Wall.*
" tomentosa, *Heyne.*
" latifolia, *Roxb.*
" indica, *L.*
Vitis Rheedei, *W. et A.*
" himalayana, *Brand.*
" auriculata, *Roxb.*
" lanceolaria, *Roxb.*
" pedata, *Vahl.*
Leea macrophylla, *Roxb.*
" sambucina, *Willd.*

SAPINDACEÆ.

Cardiospermum Halicacabum, *L.*
" canescens, *Wall.*
Hemigyrosa deficiens, *Bedd.*
Erioglossum edule, *Bl.*
Allophyllus Cobbe, *Bl.*
Schleichera trijuga, *Willd.*
Sapindus erectus, *Hiern.*
Nephelium Longana, *Camb.*
Harpulia cupanoides, *Roxb.*
Dodonœa viscosa, *Linn.*
Turpina pomifera, *DC.*

SABIACEÆ.

Meliosma pungens, *Wall.*
" simplicifolia, *Roxb.*
Meliosma Arnottiana, *Wight.*

ANACARDIACEÆ.

Rhus mysorensis, *Heyne.*
Mangifera indica, *L.*
Buchanania latifolia, *Roxb.* The Cuddapah almond; bark used by dyers and tanners.
Odina Wodier, *Roxb.* Bark used in skin diseases.
Semecarpus Anacardium, *L.* Juice of nut used with lime as marking-ink.
Holigarna Grahamii, *Hook, f.*
Holigarna longifolia, *Roxb.*
Nothopegia Colebrookiana, *Bl.*
Spondias mangifera, *Pers.*

CONNARACEÆ.

Connarus monocarpus, *L.*

LEGUMINOSÆ.

Sub-Order Papilionaceæ.

Crotalaria biflora, *L.*
" humifusa, *Grah.*
" acicularis, *Ham.*
" evolvuloides, *Wight.*
" rubiginosa, *Willd.*
" " varieties, scabrella and Wightiana.
" hirta, *Willd.*
" mysorensis, *Roth.*
" albida, *Heyne.*
" nana, *Burm.*
" linifolia, *L.*
" tecta, *Roth.*
" calycina, *Schrank.*
" speciosa, *Heyne.*
" dubia, *Grah.*
Crotalaria retusa, *L.*
" sericea, *Retz.*
" Leschenaultii, *DC.*
" formosa, *Grah.*
" barbata, *Grah.*
" longipes, *W. & A.*
" verrucosa, *L.*
" semperflorens, *Vent.*
" juncea, *L.*
" obtecta, *Grah.*
" madurensis, *Wight.*
" fulva, *Roxb.*
" pulcherrima, *Roxb.*
" Notonii, *W. & A.*
" clavata, *W. & A.*
" loburnifolia, *L.*

LEGUMINOSÆ—*cont.*

Sub-Order Papilionaceæ—cont.

Trifolium repens, *L.*
Parochetus communis, *Hamilt.*
Indigofera cordifolia, *Heyne.*
„ enneaphylla, *L.*
„ uniflora, *Hamilt.*
„ pentaphylla, *L.*
„ viscosa, *Lam.*
„ tenuifolia, *Rottl.*
„ pedicellata, *W. & A.*
„ subulata, *Vahl.*
„ parviflora, *Heyne.*
„ argentea, *L.* var. cœrulea.
„ pulchella, *Roxb.*
Psoralea corylifolia, *L.*
Milletia splendens, *W. & A.*
Mundulea suberosa, *Benth.*
Tephrosia calophylla, *Bedd.*
„ tinctoria, *Pers.*
„ purpurea, *Pers.* var. pumila.
„ villosa, *Pers.* var. incana.
Geissapsis cristata, *W. & A.*
Zornia diphylla, *Pers.*
Smithia setulosa, *Dalz.*
„ gracilis, *Benth.*
„ capitata, *Dalz.*
„ blanda, *Wall.*
Leptodesmia congesta, *Benth.*
Pycnospora hedysarioides, *R. Br.*
Pseudarthria viscida, *W. & A.*
Alysicarpus monolifer, *DC.*
„ vaginalis, *DC.* var. nummulari-folius.
„ rugosus, *DC.*
„ „ var. styracifolius.
„ belgaumensis, *Wigh.* var. racemosus.
Ougeinia dalbergioides, *Benth.*
Desmodium Cephalotes, *Wall.*
„ triquetrum, *DC.*
„ Scalpe, *DC.*
„ latifolium, *DC.*
„ Wightii, *Grah.*
„ rufescens, *DC.*
„ polycarpum, *DC.*
„ hoterophyllum, *DC.*
„ gyrans, *DC.*
Abrus precatorius, *L.*
Shuteria vestita, *W. & A.*
Dumasia villosa, *DC.*
Teramnus labialis, *Spr.*
Mucuna monosperma, *DC.*
„ gigantea, *DC.*
Erythrina indica, *Lam.*
„ stricta, *Roxb.*
„ suberosa, *Roxb.*
Galactia tenuiflora, *W. & A.*
Spatholobus Roxburghii, *Benth.*
Butea frondosa, *Roxb.*
Canavalia ensiformis, *DC.*
Pueraria tuberosa, *DC.*
Phaseolus Mungo, *L.*
„ trinervius, *Heyne.*
Vigna Wightii, *Benth.*
Clitoria Ternatea, *L.*
Dolichos ciliatus, *Klein.*
„ falcatus, *Klein.*
Atylosia Candollei, *W. & A.*
„ albicans, *Benth.*
„ rugosa, *W. & A.*
„ scarabæoides, *Benth.*
Dunbaria ferruginea, *W. & A.*
„ Heynei, *W. & A.*
Cylista scariosa, *Ait.*
Rhynchosia filipes, *Benth.*
„ minima, *DC.*
„ velutina, *W & A.*
„ sericea, *Spanoghe.*
Flemingia Grahamiana, *W & A.*
„ congesta, *Roxb.*
„ vestita, *Benth* var. nilgheriensis.
Dalbergia latifolia, *Roxb.*
„ lanceolaria, *L.*
„ paniculata, *Roxb.*
Pterocarpus Marsupium, *Roxb.*
Pongamia glabra, *Vent.*
Derris scandens, *Benth.*
„ oblonga, *Benth.*
Sophora glauca, *Lesch.*
„ heptaphylla, *Linn.*
Calpurnia aurea, *Baker.*

Sub-Order Cæsalpiniæ.

Cæsalpinia Nuga, *Ait.*
„ mimosoides, *Lam.*
Mezoneurum cucullatum, *W & A.*
Pterolobium indicum, *Rich*
Poinciana elata, *Linn.*
Wagatea spicata, *Dalz.*

LEGUMINOSÆ—*cont.*

Sub-Order Cæsalpiniæ—cont.

Cassia Fistula, *Linn.*
" occidentalis, *Linn.*
" auriculata, *Linn.*
" tomentosa, *Linn.*
" montana, *Heyne.*
" timoriensis, *DC.*
" pumila, *Lam.*
" Kleinii, *W. & A.*
" mimosoides, *L.*
" " var. Wallichiana.
Hardwickia binata, *Roxb.*
Hardwickia pinnata, *Roxb.*
Tamarindus indica, *L.*
Humboldtia Brunonis, *Wall.*
" Vahliana, *Wight.*
Bauhinia racemosa, *Lam.*
" malabarica, *Roxb.*
" Vahlii, *W & A.*
" phoenicea, *Heyne.*
" purpurea, *Linn.*
" variegata, *Linn.*

Sub-Order Mimosæ.

Xylia dolabriformis, *Benth.*
Entada scandens, *Benth.*
Prosopis spicigera, *Linn.*
Dichrostachys cinerea, *W & A.*
Mimosa rubricaulis, *Lam.*
Acacia arabica, *Willd.*
" leucophlœa, *Willd.*
" Sundra, *DC.*
" ferruginea, *DC.*
Acacia Instia, *Willd.* var. caesia.
" pennata, *Willd.*
Albizzia Lebbek, *Benth.*
" odoratissima, *Benth.*
" procera, *Benth.*
" stipulata, *Boiv.*
" amara, *Boiv.*
Pithecolobium dulce, *Benth.*
" bigeminum, *Benth.*

ROSACEÆ.

Parinarium indicum, *Bedd.*
Pygeum Wightianum, *Bl.*
Rubus moluccanus, *L.*
" ellipticus, *Sm.*
" lasiocarpus, *Sm.*
" racemosus, *Roxb.*
Fragaria indica, *Andr.*
" nilgerrensis, *Schldl.*
Potentilla Leschenaultiana, *Ser.*
" Kleiniana, *W. & A.*
" supina, *Linn.*
Alchemilla indica, *Gardn.*
Rosa Leschenaultiana, *W. & A.*
Photinia Lindleyana, *W. & A.*
" Notoniana, *W. & A.*
Cotoneaster buxifolia, *Wall.*

SAXIFRAGACEÆ.

Paranassia Wightiana, *Wall.*

CRASSULACEÆ.

Bryophyllum calycinum, *Salisb.*
Kalanchoe grandiflora, *W. & A.*
Kalanchoe laciniata, *DC.*

DROSERACEÆ.

Drosera Burmanni, *Vahl.*
" indica, *L.*
Drosera peltata, *Smith.*

HALORAGEÆ.

Serpicula indica, *Thw.*
Myriophyllum intermedium, *DC.*
Callitriche stagnalis, *Scop.*

RHIZOPHOREÆ.

Carallia integerrima, *DC.*

COMBRETACEÆ.

Terminalia Catappa, *L.*
„ belerica, *Roxb.*
„ Chebula, *Retz.*
„ Arjuna, *Bedd.*
„ tomentosa, *Bedd.*
„ paniculata, *Roth.*
Anogeissus latifolia, *Wall.*
Combretum ovalifolium, *Roxb.*
„ extensum, *Roxb.*
Quisqualis malabarica, *Bedd.*
Gyrocarpus Jacquini, *Roxb.*

MYRTACEÆ.

Psidium Guyava, *L.*
Rhodomyrtus tomentosa, *Wight.*
Eugenia Munronii, *Wight.*
„ hemispherica, *Wight.*
„ læta, *Ham.* var. pauciflora.
„ Arnottiana, *Wight.*
„ Wightiana, *Wight.*
„ zeylanica, *Wight.*
„ montana, *Wight.*
„ caryophyllæa, *Wight.*
Eugenia revoluta, *Wight.*
„ calophyllifolia, *Wight.*
„ malabarica, *Bedd.*
„ Jambolana, *Lamk.*
„ bracteata, *Roxb.*
„ argentea, *Bedd.*
„ Mooniana, *Wight.*
Barringtonia racemosa, *Bl.*
Careya arborea, *Roxb.*

MELASTOMACEÆ.

Osbeckia cupularis, *Don.*
„ aspera, *Bl.*
„ Wightiana, *Benth.*
„ Leschenaultiana, *DC.*
„ Wynaadensis, *C. B. Clarke.*
Melastoma malabathricum, *L.*
Sonerila speciosa, *Zenk.*
Sonerila grandiflora, *Wall.*
„ elegans, *Wight.*
„ versicolor, *Wight.*
„ Wallichii, *Benn.*
Medinilla Beddomei, *C. B. Clarke.*
„ malabarica, *Bedd.*
Memecylon edule, *Roxb.* var. typica.

LYTHRACEÆ.

Woodfordia floribunda, *Salisb.*
Lagerstrœmia parviflora, *Roxb.*
Lagerstrœmia lanceolata, *Wall.*
„ Flos—Reginæ, *Retz.*

ONAGRACEÆ.

Jussiæa suffruticosa, *L.*
Ludwigia prostrata, *Roxb.*
Circæa alpina, *Wight.*

SAMYDACEÆ.

Casearia esculenta, *Roxb.*
„ tomentosa, *Roxb.*
Casearia Wynadensis, *Bedd.*
Homalium zeylanicum, *Benth.*

PASSIFLOREÆ.

Passiflora Leschenaultii, *DC.*
Modecca Wightiana, *Wall.*

CUCURBITACEÆ.

Trichosanthes palmata, *Roxb.*
Gymnopetalum Wightii, *Arn.*
Luffa aegyptiaca, *Mill.*
Momordica dioica, *Roxb.*
Cucumis pubescens, *Willd.*
Citrullus Colocynthis, *Schrad.*
Cephalandra indica, *Naud.*
Bryonia laciniosa, *L.*
Mukia scabrella, *Arn.*
„ leiosperma, *Thw.*
Zehneria Baueriana, *Endl.*
Ctenolepis Garcini, *Naud.*
Zanonia indica, *L.*

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BEGONIACEÆ.

Begonia fallax, *A. DC.*
„ crenata, *Dryand.*
Begonia subpeltata, *Wight*
„ malabarica, *Lamk.*

DATISCEÆ.

Tetrameles nudiflora, *R.Br.*

FICOIDEÆ.

Mollugo Spergula, *L.*
Gisekia pharnaceoides, *L.*

UMBELLIFERÆ.

Hydrocatyle javanica, *Thumb.*
„ conferta, *Wight.*
„ rotundi folia, *Roxb.*
Sanicula europæa, *L.*
Bupleurum plantaginifolium, *Wight.*
„ mucronatum, *W. & A.*
Bupleurum distichophyllum, *W. & A.*
Pimpinella Leschenaultii, *DC.*
„ Candolleana, *W. & A.*
Heracleum Hookeri anum, *W. & A.*
„ rigens, *Wall.*
„ Sprengelianum, *W. & A.*

ARALIACEÆ.

Aralia malabarica, *Bedd.*
Pentapanax Leschenaultii, *Seem.*
Polyscias acuminata, *Forst.*
Heptapleurum rostratum, *Bedd.*
Heptapleurum racemosum, *Bedd.*
„ venulosum, *Seem.*
„ stellatum, *Gærtn.*

CORNACEÆ.

Alangium Lamarckii, *Thw.*
Mastixia arborea, *C. B. Clarke.*

CAPRIFOLIACEÆ.

Viburnum punctatum, *Ham.*
„ coriaceum, *Bl.*
„ hebanthum, *W. & A.*
Viburnum erubescens, *Wall.*
Lonicera Leschenaultii, *Wall.*
„ ligustrina, *Wall.*

RUBIACEÆ.

Anthocephalus Cadamba, *Miq.*
Adina cordifolia, *Hook. f.*
Stephegyne parvifolia, *Korth.*
Nauclea purpurea, *Roxb.*
Hymenodictyon excelsum, *Wall.*
„ obovatum, *Wall.*
Wendlandia Notoniana, *Wall.*
Dentella repens, *Forst.*
Argostemma courtallense, *Arn.*
Neurocalyx Wightii, *Arn.*
Fergusonia zeylanica, *Hook, f.*
Hedyotis fruticosa, *L.*
„ stylosa, *Br.*
„ articularis, *Br.*
Hedyotis pruinosa, *W. & A.*
„ hirsutissima, *Bedd.*
„ verticillaris, *W & A.*
„ Lawsoniæ, *W. & A.*
„ Auricularia, *L.*
„ nitida, *W. & A.*
Oldenlandia Heynii, *Br.*
„ aspera, *DC.*
Anotis Leschenaultiana, *W. & A.*
„ Rheedii, *W. & A.*
„ fœtida, *Dalz.*
„ Wightiana, *Wall.*
„ monosperma, *W. & A.*

RUBIACEÆ—*cont.*

Ophiorrhiza Mungos, *L.*
,, Harrisiana, *Heyne* var. argentea.
,, Brunonis, *W. & A.*
,, hirsutula, *Wight.*
Mussaenda frondosa, *Linn.*
Webera corymbosa, *Willd.*
,, lucens, *Hook. f.*
,, nilagirica, *Hook. f.*
Randia malabarica, *Lamk.*
,, rugulosa, *Thw.* var. speciosa.
Gardenia lucida, *Roxb.*
,, gummifera, *L. f.*
,, latifolia, *Ait.*
Diplospora apiocarpa, *Dalz.*
Knoxia corymbosa, *Willd.*
,, Wightiana, *Wall.*
Canthium didymum, *Roxb.*
,, umbellatum, *Wight.*
,, neilgherrense, *Wight.*
,, Rheedii, *DC.*
,, angustifolium, *Roxb.*
,, parviflorum, *Lamk.*
Ixora lanceolaria, *Colebr.*
,, Notoniana, *Wall.*
,, parviflora, *Vahl.*
,, nigricans, *Br.*
Pavetta indica, *L.*
,, hispidula, *W. & A.*
,, breviflora, *DC.*
,, Brunonis, *Wall.*
,, Wightii, *Hook. f.*
Morinda umbellata, *L.*
Psychotria congesta, *W. & A.*
,, elongata, *Wight.*
,, bisulcata, *W. & A.*
Chasalia curviflora, *Thw.*
Geophila reniformis, *Don.*
Lasianthus Jackianus, *Wight.*
,, ciliatus, *Wight.*
,, acuminatus, *Wight.*
,, venulosus, *Wight.*
,, capitulatus, *Wight.*
Saprosma indicum, *Dalz.*
,, fragrans, *Bedd.*
,, ceylanicum, *Bedd.*
Hamiltonia suaveolens, *Roxb.*
Spermococe stricta, *Linn, f.*
,, ocymoides, *Burm.*
,, hispida, *L.*
Rubia cordifolia, *L.*
Galium rotundifolium. var. javanicum
,, Mollugo, *L.*

VALERIANEÆ.

Valeriana Hardwickii, *Wall.* var. Arnottiana.
,, Hookeriana, *W. & A.*
Valeriana Leschenaultii, *DC.*
,, ,, var. Brunoniana.

DIPSACEÆ.

Dipsacus Leschenaultii, *Coult.*

COMPOSITÆ.

Centratherum reticulatum, *Benth.*
Vernonia malabarica, *Hook. f.*
,, cinerea, *Less.*
,, divergens, *Benth.*
,, Candolleana, *W. & A.*
,, elæagnifolia, *DC.*
,, indica, *Clarke.*
,, pectiniformis, *DC.*
,, arborea, *Ham.*
Elephantopus scaber, *L.*
Adenostemma viscosum, *Forst.*
Ageratum conyzoides, *L.*
Dichrocephala latifolia, *DC.*
,, chrysanthemifolia, *DC.*
Cyathocline lyrata, *Cass.*
Grangea maderaspatana, *Poir.*
Myriactis Wightii, *DC.*
Erigeron alpinus, *L.*
Conyza stricta, *Willd.*
Blumea neilgherrensis, *Hook. f.*
,, hieracifolia, *DC.*
,, laciniata, *DC.*
,, virens, *DC.*
,, membranacea, *DC.*
,, flexuosa, *Clarke.*
Laggera alata, *Schultz.*
,, pterodonta, *Benth.*
Pluchea tomentosa, *DC.*
Sphæranthus indicus, *L.*
Anaphalis oblonga, *DC.*
,, Notoniana, *DC.*
,, aristata, *DC.*

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COMPOSITÆ—*cont.*

Anaphalis Wightiana, *DC.*
,, marcescens, *Clarke.*
,, neelgherriana, *DC.*
Gnaphalium hypoleucum *DC.*
,, indicum, *L.*
Helichrysum buddleioides, *DC.*
,, Wightii, *Clarke.*
Vicoa auriculata, *Cass.*
Carpesium cernuum, *L*, var. nilagiricum.
Chrysogonum heterophyllum, *Benth.*
,, Arnottianum, *Benth.*
Xanthium Strumarium, *L.*
Siegesbeckia orientalis, *L.*
Eclipta alba, *Hassk.*
Wedelia urticæfolia, *DC.*
,, biflora, *DC.*
Spilanthes Acmella, *L.*
Glossocardia linearifolia, *Cass.*
Bidens pilosa, *L.*
Centipeda orbicularis, *Lour.*
Artemisia parviflora, *Roxb.*
,, vulgaris, *L.*
Gynura nitida, *DC.*
Emilia sonchifolia, *DC.*
Emilia sonchifolia, *DC.* var. Scabra.
Notonia grandiflora, *DC.*
,, Walkeri, *Clarke.*
Senecio nilgheryanus, *DC.*
,, lavandulæfolius, *DC.*
,, saxatilis, *Wall.*
,, polycephalus, *Clarke.*
,, Lessingianus, *Clarke.*
,, Hohenackeri, *Hook. f.*
,, tenuifolius, *Burm.*
,, Edgeworthii, *Hook. f.*
,, araneosus, *DC.*
,, corymbosus, *Wall.*
,, scandens, *Don.*
,, candicans, *DC.*
Cnicus Wallichi, *DC.*
Volutarella divaricata, *Benth.*
Picris hieracioides, *L.*
Crepis acaulis, *Hook f.*
Taraxacum officinale, *Wigg.*
Lactuca Heyneana, *DC.*
,, hastata, *DC.*
Sonchus oleraceus, *L.*
,, arvensis, *L.*

CAMPANULACEÆ.

Lobelia trigona, *Roxb.*
,, nicotianæfolia, *Heyne.*
,, excelsa, *Leschen.*
Wahlenbergia gracilis, *DC.*
Campanula colorata, *Wall.*
,, Alphonsii, *Wall.*
,, fulgens, *Wall.*

VACCINIACEÆ.

Vaccinium nilgherrense, *Wight.*
Vaccinium Leschenaultii, *Wight.*

ERICACEÆ.

Gaultheria fragrantissima, *Wall.*
Rhododendron arboreum, *Sm.*

PRIMULACEÆ.

Lysimachia Leschenaultii, *Duby.*
,, deltoides, *Wight.*
Anagallis arvensis, *L.*

MYRSINEÆ.

Mæsa indica, *Wall.*
Myrsine capitellata, *Wall.* var. Lanceolata.
Embelia Ribes, *Burm.*
,, robusta, *Roxb.*
Embelia viridiflora, *Schiff.*
,, Gardneriana, *Wight.*
Ardisia pauciflora, *Heyne.*
,, humilis, *Vahl.*
Antistrophe serratifolia, *Hook. f.*

SAPOTACEÆ.

Chrysophyllum Roxburghii, *Don.*
Isonandra Candolleana, *Wight.*
,, Perottetiana, *Wight.*
Isonandra lanceolata, *Wight.*
Dichopsis elliptica, *Benth.*
Mimusops Roxburghiana, *Wight.*

EBENACEÆ.

Diospyros pruriens, *Dalz.*
" montana, *Roxb.*
" Embryopteris, *Pers.*
" ovalifolia, *Wight.*
" Ebenum, *Kœnig.*

Diospyros sylvatica, *Roxb.*
" melanoxylon, *Roxb.*
" Candolleana, *Wight.*
" nilagirica, *Bedd.*
" paniculata, *Dalz.*

STYRACEÆ.

Symplocos spicata, *Roxb.*
" microphylla, *Wight.*
" Gardneriana, *Wight.*
" foliosa, *Wight.*

Symplocos pulchra, *Wight.*
" obtusa, *Wall.*
" pendula, *Wight.*

OLEACEÆ.

Jasminum Sambac, *Ait.*
" Rottlerianum, *Wall.*
" cordifolium, *Wall.*
" rigidum, *Zenkr.*
" trichotomum, *Heyne.*
" brevilobum, *A.DC.*
" flexile, *Vahl.*
" calophyllum, *Wall.*
" humile, *Linn.*
Linociera intermedia, *Wight.*

Olea glandulifera, *Wall.*
" polygama, *Wight.*
Ligustrum robustum, *Bl.*
" Walkeri, *Dcne.*
" Roxburghii, *Clarke.*
" neilgherrense, *Wight.*
" Perrottetii, *A.DC.*
" Decaisnei, *Clarke.*
Myxopyrum smilacifolium, *Bl.*

APOCYNACEÆ.

Chilocarpus atro-viridis, *Bl.*
Carissa Carandas, *L.*
" paucinervia, *A.DC.*
Rauwolfia serpentina, *Benth.*
" densiflora, *Benth.*
Plumeria acutifolia, *Poiret.*
Alstonia scholaris, *Brown.*
" venenatus, *Brown.*

Holarrhena antidysenterica, *Wall.*
Tabernæmontana dichotoma, *Roxb.*
Wrightia tinctoria, *Br.*
" tomentosa, *Roem & Sch.*
Beaumontia Jerdoniana, *Wight.*
Chonemorpha macrophylla, *G.Don.*
Anodendron paniculatum, *A.DC.*
Ichnocarpus frutescens, *Br.*

ASCLEPIADEÆ.

Hemidesmus indicus, *Br.*
Brachylepis nervosa, *W. & A.*
Secamone emetica, *Br.*
Calotropis gigantea, *Br.*
Dæmia extensa, *Br.*
Holostemma Rheedei, *Wall.*
Cynanchum alatum, *W. & A.*
" pauciflorum, *Br.*
" Callialata, *Ham.*
Sarcostemma Brunonianum, *W. & A.*
Gymnema sylvestre, *Br.*
" hirsutum, *W. & A.*
" montanum, *Hook. f.*
" elegans, *W. & A.*

Tylophora fasciculata, *Ham.*
" macrantha, *Hook. f.*
" Iphisia, *Dcne.*
" pauciflora, *W. & A.*
" tenuis, *Bl.*
" mollissima, *Wight.*
" asthmatica, *W. & A.*
Dregea volubilis, *Benth.*
Hoya pauciflora, *Wight.*
" Wightii, *Hook. f.*
" ovalifolia, *W. & A.*
" pendula, *Wight.*
Brachystelma maculatum, *Hook. f.*
Ceropegia pusilla, *Wight.*

ASCLEPIADEÆ—*cont.*

Ceropegia elegans, *Wall.*
,, tuberosa, *Roxb.*
,, ciliata, *Wight.*
,, Decaisneana, *Wight.*
Caralluma attenuata, *Wight.*
Boucerosia umbellata, *W. & A.*
,, diffusa, *Wight.*

LOGANIACEÆ.

Mitreola oldenlandioides, *Wall.*
Buddleia asiatica, *Lour.*
Fagræa obovata, *Wall.*
Strychnos cinnamomifolia, *Thw.*
Strychnos nux-vomica, *L.*
Gærtnera Kœnigii, *Wight.*
Gardneria ovata, *Wall.*

GENTIANACEÆ.

Exacum Perrottetii, *Griseb.*
,, bicolor, *Roxb.*
,, Wightianum, *Arn.*
,, pedunculatum, *L.*
,, sessila, *L.*
Enicostema littorale, *Bl.*
Canscora diffusa, *Br.*
,, sessiliflora, *Roem & Sch.*
Canscora decussata, *Roem & Sch.*
,, perfoliata, *Lamk.*
Gentiana quadrifaria, *Bl.*
Pleurogyne ? minor, *Benth.*
Swertia corymbosa, *Wight.*
,, trichotoma, *Wall.*
Halenia Perrottetii, *Griseb.*

BORAGINEÆ.

Cordia Myxa, *L.*
,, obliqua, *Willd.* var. Wallichii.
,, monoica, *Roxb.*
,, Rothii, *Roem & Sch.*
Ehretia lævis, *Roxb.*
,, ,, var. aspera.
,, ovalifolia, *Wight.*
Rhabdia lycioides, *Mart.*
Tournefortia Heyneana, *Wall.*
,, reticosa, *Wight.*
Trichodesma indicum, *Br.*
Cynoglossum furcatum, *Wall.*
,, denticulatum, *A.DC.*

CONVOLVULACEÆ.

Ericybe paniculata, *Roxb.*
Rivea hypocrateriformis, *Chois.*
Argyreia tiliæfolia, *Wight.*
,, speciosa, *Sweet.*
,, populifolia, *Chois.*
,, pomacea, *Chois.*
,, Leschenaultii, *Chois.*
,, nellygherya, *Chois.*
,, hirsuta, *Arn.*
,, cymosa, *Sweet.*
,, cuneata, *Ker.*
Lettsomia aggregata, *Roxb.*
,, setosa, *Roxb.*
Ipomæa hederacea, *Jacq.*
,, digitata, *L.*
Ipomæa Wightii, *Chois.*
,, pes-tigridis, *L.*
,, eriocarpa, *Br.*
,, chryseides, *Ker.*
,, obscura, *Ker.*
,, sepiaria, *Koen.*
,, Belabamdoe, *Roem & Sch.*
,, campanulata, *L.*
,, Turpethum, *Br.*
,, vitifolia, *Sweet.*
,, pilosa, *Sweet.*
Convolvulus flavus, *Willd.*
Evolvulus alsinoides, *L.*
Breweria cordata, *Bl.*
Cuscuta reflexa, *Roxb.*

SOLANACEÆ.

Solanum verbascifolium, *L.*
,, bigeminatum, *Nees.*
,, læve, *Dunal.*
,, denticulatum, *Bl.*
,, giganteum, *Jacq.*
,, ferox, *L.*
Solanum Wightii, *Nees.*
,, torvum, *Sw.*
,, indicum, *L.*
Physalis peruviana, *L.*
Withania somnifera, *Dun.*
Datura fastuosa, *L.*

SCROPHULARIACEÆ

Verbascum virgatum, *With.*
Mazus surculosus, *Don.*
Limnophila hirsuta, *Benth.*
„ hypericifolia, *Benth.*
Herpestis Monnieria, *H.B. & K.*
Dopatrium junceum, *Ham.*
Artanema sessamoides, *Benth.*
Torenia asiatica, *L.*
„ vagans, *Roxb.*
„ hirtella, *Hook. f.*
Vandellia crustacea, *Benth.*
Illysanthes hyssopioides, *Benth.*
Bonnaya veronicæfolia, *Sprengl.*
Veronica Anagallis, *L.*
Buchnera hispida, *Ham.*
Striga lutea, *Lour.*
Centranthera procumbens, *Benth.*
Sopubia delphinifolia, *G. Don.*
„ trifida, *Ham.*
Pedicularis Perrottetii, *Benth.*
„ zeylanica, *Benth.*

OROBANCHACEÆ.

Ægenetia pedunculata, *Wall.*
Christisonia subacaulis, *Gardn.*
Christisonia bicolor, *Gardn.*
„ neilgherrica, *Gardn.*

LENTIBULARIEÆ.

Utricularia flexuosa, *Vahl.*
„ exoleta, *Br.*
„ affinis, *Wight.*
„ cœrulea, *L.*
Utricularia reticulata, *Smith.*
„ bifida, *L.*
„ Wallichiana, *Wight.*
„ orbiculata, *Wall.*

GESNERACEÆ.

Æschynanthus ceylanica, *Gardn.*
Didymocarpus Rottleriana, *Wall.*
„ tomentosa, *Wight.*
Klugia Notoniana, *A.DC.*
Jerdonia indica, *Wight.*
Epithema carnosum, *Benth.* var. zeylanica.

BIGNONIACEÆ.

Oroxylum indicum, *Vent.*
Dolichandrone Rheedii, *Seem.*
„ crispa, *Seem.*
„ arcuata, *Clarke.*
Stereospermum suaveolens, *DC.*
„ xylocarpum, *Wight.*
Pajanelia Rheedii, *DC.*

ACANTHACEÆ.

Thunbergia fragrans, *Roxb.*
„ tometosa, *Wall.*
„ Hawtayneana, *Wall.*
„ mysorensis, *T. Anders.*
„ Wightiana, *T. Anders.*
Elytraria crenata, *Vahl.*
Nelsonia campestris, *Br.*
Ebermaiera glauca, *Nees.*
Cardanthera balsamica, *Benth.*
Hygrophila Serpyllum, *T. Anders.*
„ salicifolia, *Nees.*
Ruellia patula, *Jacq.*
Phaylopsis parviflora, *Willd.*
Dædalacanthus roseus, *T. Anders.*
„ montanus, *T. Anders.*
Hemigraphis dura, *T. Anders.*
„ elegans, *Nees.* var. crenata.
Stenosiphonium confertum, *Nees.*
Stenosiphonium Russellianum, *Nees.*
Strobilanthes foliosus, *T. Anders.*
„ Kunthianus, *T. Anders.*
„ gossypinus, *T. Anders.*
„ cuspidatus, *T. Anders.*
„ consanguineus, *Clarke.*
„ barbatus, *Nees.*
„ heteromallus, *T. Anders.*
„ Wightianus, *Nees.*
„ pulneyensis, *Clarke.*
„ neilgherrensis, *Bedd.*
„ Perrottetianus, *Nees.*
„ Zenkerianus, *T. Anders.*
„ ciliatus, *Nees.*
„ decurrens, *Nees.*
„ caudatus, *T. Anders.*
„ tristis, *T. Anders.*
„ anceps, *Nees.*

ACANTHACEÆ—*cont.*

Strobilanthes lupulinus, *Nees.*
,, Heyneanus, *Nees.*
,, micranthus, *Wight.*
,, papillosus, *T. Anders.*
,, luridus, *Wight.*
,, bolamputtensis, *Bedd.*
,, asper, *Wight.*
,, sessilis, *Nees.*
,, ,, var. sessiloides.
,, sexennis, *Nees.*
,, homotropus, *Nees.*
,, violaceus, *Bedd.*
,, rubicundus, *T. Anders.*
,, paniculatus, *T. Anders.*
,, pulcherrimus, *T. Anders*
,, amabilis, *Clarke.*
Blepharis bœrhaaviæfolia, *Pers.*
Barleria Prionitis, *L.*
,, cuspidata, *Heyne.*
,, involucrata, *Nees.*
,, cristata, *L.*
,, strigosa, *Willd.*
,, nitida, *Nees.*
Crossandra undulæfolia, *Salisb.*
Asystasia coromandelina, *Nees.*
,, chelonoides, *Nees.*
,, crispata, *Benth.*
Andrographis paniculata, *Nees.*
,, alata, *Nees.*
,, viscosula, *Nees.* var. explicata.
Andrographis Neesiana, *Wight.*
,, stellulata, *Clarke.*
,, lineata, *Nees.*
,, lobelioides, *Wight.*
,, echioides, *Nees.*
Haplanthus verticillaris, *Nees.*
,, tentaculatus, *Nees.* var. nilghirrensis.
Gymnostachyum canescens, *T. Anders.*
Lepidagathis trinervis, *Nees.*
,, hyalina, *Nees.*
,, fasciculata, *Nees.*
Monothecium aristatum, *T. Anders.*
Justicia montana, *Wall.*
,, Betonica, *L.*
,, nilgherrensis, *Wall.*
,, trinervia, *Vahl.*
,, glauca, *Rottler.*
,, Wynaadensis, *Wall.*
,, glabra, *Kœnig.*
Rhinacanthus communis, *Nees.*
Dianthera leptostachya, *Benth.*
Ecbolium Linneanum, *Kurz.*
Rungia sisparensis, *T. Anders.*
,, latior, *Nees.*
,, repens, *Nees,* var.
,, parviflora, *Nees.* var. pectinata.
Peristrophe bicalyculata, *Nees.*
,, undulata, *Nees.*
,, montana, *Nees.*

VERBENACEÆ.

Lantana indica, *Roxb.*
Stachytarpheta indica, *Vahl.*
Callicarpa lanata, *L.*
Tectona grandis, *Linn, f.*
Premna villosa, *Clarke.*
,, purpurascens, *Thw.*
,, tomentosa, *Willd.*
,, herbacea, *Roxb.*
Gmelina arborea, *L.*
Gmelina asiatica, *L.*
Vitex Negundo, *L.*
,, altissima, *L. f.*
,, leucoxylon, *L. f.*
Clerodendron serratum, *Spreng.*
,, infortunatum, *Gærtn.*
Symphorema polyandrum, *Wight.*
Sphenodesma paniculata, *Clarke.*

LABIATÆ.

Ocimum canum, *Sims.*
,, gratissimum, *L.*
,, sanctum, *L.*
Plectranthus rivularis, *Wight.*
,, Wightii, *Benth.*
,, nilghiricus, *Benth.*
,, nepetæfolius, *Benth.*
,, menthoides, *Benth.*
,, coleoides, *Benth.*
,, urticæfolius, *Hook. f.*
Coleus barbatus, *Benth.*
,, malabaricus, *Benth.*
Anisochilus carnosus, *Wall.*
,, dysophylloides, *Benth.*
,, suffruticosus, *Wight.*
Pogostemon Gardneri, *Hook. f.*
,, Patchouli, *Pelletier.*
,, paludosus, *Benth.*
,, Wightii, *Benth.*
,, mollis, *Benth.*

LABIATÆ—*cont.*

Pogostemon rotundatus, *Benth.*
„ atropurpureus, *Benth.*
„ speciosus, *Benth.*
Dysophylla cruciata, *Benth.*
Micromeria biflora, *Benth.*
Calamintha umbrosa, *Benth.*
Scutellaria violacea, *Heyne.*
„ rivularis, *Wall.*
Brunella vulgaris, *L.*
Anisomeles ovata, *Br.*
„ malabarica, *Br.*
Leonurus sibircus, *L.*
Leucas urticæfolia, *Br.*
„ lanata, *Benth.*
„ procumbens, *Desf.*
„ marrubioides, *Desf.*
„ angularis, *Benth.*
Leucas pubescens, *Benth.*
„ suffruticosa, *Benth.*
„ rosmarinifolia, *Benth.*
„ helianthemifolia, *Desf.*
„ lænceæfolia, *Desf.*
„ eriostoma, *Hook. f.*
„ lamiifolia, *Desf.*
„ hirta, *Spreng.*
„ ciliata, *Benth.*
„ Cephalotes, *Spr.*
„ zeylanica, *Br.*
Leonotis nepetæfolia, *Br.*
Gomphostemma strobilinum, *Wall.* var. Heyneana.
Teucrium tomentosum, *Heyne*
„ Wightii, *Hook. f.*

PLANTAGINEÆ.

Plantago major, *L.*

NYCTAGINEÆ.

Bœrhaavia repens, *L.*
„ repanda, *Willd.*
Pisonia aculeata, *L.*

AMARANTACEÆ.

Celosia argentea, *L.*
„ pulchella, *Moq.*
Banalia thyrsiflora, *Moq.*
Allmania nodiflora, *Br.*
Digera arvensis, *Forsk.*
Amarantus paniculatus, *L.*
„ caudatus, *L.*
„ gangeticus, *L.*
Cyathula prostrata, *Bl.*
Ærua javanica, *Juss.*
„ lanata, *Juss.*
„ Monsonia, *Mart.*
Achyranthes aspera, *L.*
„ bidentata, *Bl.*
Alternanthera sessilis, *Br.*

CHENOPODIACEÆ.

Chenopodium ambrosioides, *L.*
Atriplex hortensis, *L.*

POLYGONACEÆ.

Polygonum glabrum, *Willd.*
„ minus, *Huds.*
„ barbatum, *L.*
„ alatum, *Ham.*
„ sphærocephalum, *Wall.*
Polygonum chinense, *L.*
„ strigosum, *Br.*
„ pedunculare, *Wall.*
Rumex nepalensis, *Spreng.*

PODOSTEMONACEÆ.

Podostemon dichotomus, *Gardn.*
„ „ var. Wightii.
Podostemon olivaceus, *Gardn.*

ARISTOLOCHIACEÆ.

Bragantia Wallichii, *Br.*
Aristolochia indica, *L.*

PIPERACEÆ.

Piper galetum, *Cas, DC.*
" trichostachyon, *Cas, DC.*
" Betle, *L.*
" brachystachyum, *Wall.*
" Schmidtii, *Hook. f.*
" nigrum, *L.*
" attenuatum, *Ham.*
Piper Hymenophyllum, *Miq.*
" argyrophyllum, *Miq.*
" Wightii, *Miq.*
" subpeltatum, *Willd.*
Peperomia Wightiana, *Miq.*
" dindigulensis, *Miq.*
" reflexa, *A. Dieter.*

CHLORANTHACEÆ.

Chloranthus brachystachyus, *Bl.*

MYRISTICEÆ.

Myristica laurifolia, *Hook. f. & T.*
" Farquhariana, *Wall.*
Myristica attenuata, *Wall.*

LAURINÆ.

Cryptocarya Wightiana, *Thw.*
Apollonias Arnottii, *Nees.*
Cinnamomum zeylanicum, *Breyn.*
" sulphuratum, *Nees.*
" Wightii, *Meissn.*
" Perrottetii, *Meissn.*
Machilus macrantha, *Nees.*
Phœbe lanceolata, *Nees.*
" paniculata, *Nees.*
Alseodaphne semicarpifolia, *Nees.*
Actinodaphne salicina, *Meissn.*
" campanulata, *Hook f.*
" lanata, *Meissn.*
Litsæa sebifera, *Pers.*
" ligustrina, *Nees.*
" oleoides, *Meissn.*
" Wightiana, *Wall.*
" Zeylanica, *C. & Fr. Nees.*
Cassytha filiformis, *L.*

PROTEACEÆ.

Helicia nilagirica, *Bedd.*

THYMELÆACEÆ.

Lasiosiphon eriocephalus, *Dcne.*

ELÆAGNACEÆ.

Elæagnus latifolia, *L.*

LORANTHACEÆ.

Loranthus intermedius, *Wight.*
" scurrula, *L.*
" cordifolius, *Wall.*
" tomentosus, *Heyne.*
" bracteatus, *Heyne.*
" recurvus, *Wall.*
" longiflorus, *Desrouss.*
" elasticus, *Desrouss.*
" neelgherrensis, *W. & A.*
Loranthus memecylifolius, *W. & A.*
" lageniferus, *Wight.*
" loniceroides, *L.*
Viscum monoicum, *Roxb.*
" orientale, *Willd.*
" orbiculatum, *Wight.*
" capitellatum, *Sm.*
" articulatum, *Burm.*
" japonicum, *Thunb.*

SANTALACEÆ.

Thesium Wightianum, *Wall.*
Santalum album, *L.*
Osyris arborea, *Wall.*

BALANOPHORÆ.

Balanophora indica, *Wall.*

EUPHORBIACEÆ.

Euphorbia pycnostegia, *Boiss.*
" hypericifolia, *L.*
" pilulifera. *L.*
" Tirucalli, *L.*
" antiquorum, *L.*
" trigona, *Haw.*
" helioscopica, *L.*
" Rothiana, *Spreng.*
Sarcococca pruniformis, *Lindl.*
Bridelia retusa, *Spr.*
" montana, *Willd.*
" stipularis, *Bl.*
Cleistanthus collinus, *Benth.*
" patulus, *Muell.*
Actephila excelsa, *Muell.*
Agyneia bacciformis, *A. Juss.*
Phyllanthus Emblica, *L.*
" polyphyllus, *Willd.*
" Lawii, *Grah.*
" Rheedii, *Wight.*
" simplex, *Retz.* var. Gardneriana.
" Leschenaultii, *Muell.*
" fimbriatus, *Muell.*
" Wightianus, *Muell.*
" indicus, *Muell.*
Glochidion fagifolium, *Miq.*
" arboreum, *Wight.*
" neilgherrense, *Wight.*
" malabaricum, *Bedd.*
" velutinum, *Wight.*
Flueggea microcarpa, *Bl.*
" leucopyrus, *Willd.*
Breynia patens, *Benth.*
" rhamnoides, *Muell.*
Sauropus quadrangularis, *Muell.*
Putranjiva Roxburghii, *Wall.*
Hemicyclia sepiaria, *W. & A.*
" venusta, *Thw.*
" elata, *Bedd.*
" Wightii, *Hook. f.*
Cyclostemon macrophyllus, *Bl.*
Bischofia javanica, *Bl.*
Aporosa Lindleyana, *Baill.*
Daphniphyllum glaucescens, *Bl.*
Antidesma Ghaesembilla, *Gærtn.*
" diandrum, *Roth.*
Baccaurea courtallensis, *Muell.*
Jatropha Wightiana, *Muell.*
Croton malabaricus, *Bedd.*
" Klotzschianus, *Wight.*
Givotia rottleriformis, *Griff.*
Ostodes zeylanica, *Muell.*
Blachia umbellata, *Baill.*
" reflexa, *Benth.*
" calycina, *Benth.*
Dimorphocalyx Lawianus, *Hook. f.*
Agrostistachys indica, *Dalz.*
" longifolia, *Benth.*
Claoxylon indicum, *Hassk.*
" Mercurialis, *Thw.*
Acalypha paniculata, *Miq.*
" alnifolia, *Klein.*
" indica, *L.*
Trewia nudiflora, *L.*
Mallotus barbatus, *Muell.*
" albus, *Muell.* var. Occidentalis.
" muricatus, *Bedd.*
" philippinensis, *Muell.*
Cleidion javanicum, *Bl.*
Macaranga indica, *Wight.*
" Roxburghii, *Wight.*
Homonoia riparia, *Lour.*
" retusa, *Muell.*
Gelonium lanceolatum, *Willd.*
Baliospermum axillare, *Bl.*
Tragia involucrata, *L.*
" bicolor, *Miq.*
Dalechampia velutina, *Wight.*
Sapium insigne, *Benth.*
Excœcaria crenulata, *Wight.*
" robusta, *Hook. f.*
Sebastiania Chamælea, *Muell.*

URTICACEÆ.

Holoptelea integrifolia, *Planch.*
Celtis tetrandra, *Roxb.*
" Wightii, *Planch.*
Trema orientalis, *Bl.*
Gironniera reticulata, *Thw.*
Phyllochlamys spinosa, *Bureau.*
Streblus asper, *Lour.*
Plecospermum spinosum, *Trecul.*
Dorstenia indica, *Wall.*
Ficus Dalhousiæ, *Miq.*
Ficus benghalensis, *L.*
" tomentosa, *Roxb.*
" retusa, *L.*
" nervosa, *Roth.*
" religiosa, *L.*
" Tsiela, *Roxb.*
" infectoria, *Roxb.*
" macrocarpa, *Wight.*
" guttata, *Kurz.*
" glomerata, *Roxb.*

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URTICACEÆ—*cont.*

Antiaris toxicaria, *Leschen.*
Artocarpus hirsuta, *Lamk.*
" integrifolia, *Linn. f.*
" Lakoocha, *Roxb.*
Urtica parviflora, *Roxb.*
Fleurya interrupta, *Gaud.*
Laportea terminalis, *Wight.*
" crenulata, *Gaud.*
Girardinia heterophylla, *Dcne.*
Pilea Wightii, *Wedd.*
" trinervia, *Wight.*
Lecanthus Wightii, *Wedd.*
Pellionia Heyneana, *Wedd.*
Elatostema sessile, *Forst.*
" lineolatum, *Wight.*
" Wightii, *Hook. f.*
" surculosum, *Wight.*
Procris lævigata, *Blume.*
Boehmeria malabarica, *Wedd.*
" platyphylla, *Don.* var. varlongissima.
Chamabainia cuspidata, *Wight.*
Pouzolzia indica, *Gaud.*
" auriculata, *Wight.*
" pentandra, *Benn.*
" " var. ramosissima.
" Wightii, *Benn.*
" caudata, *Benn.*
" Bennettiana, *Wight.*
" " var. tomentosa.
" " var. Gardneri.
" " var. quadrialata.
Villebrunea integrifolia, *Gaud.*
Debregeasia velutina, *Gaud.*
Droguetia diffusa, *Wedd.*

SALICINEÆ.

Salix tetrasperma, *Roxb.*

CERATOPHYLLEÆ.

Ceratophyllum demersum, *L.*

GNETACEÆ.

Gnetum scandens, *Roxb.*

CYCADACEÆ.

Cycas circinalis, *L.*

HYDROCHARIDEÆ.

Blyxa Roxburghii, *Rich.*
Ottelia alismoides, *Pers.*

BURMANNIACEÆ.

Burmannia cœlestis, *Don.*

ORCHIDEÆ.

Oberonia iridifolia, *Lindl.*
" verticillata, *Wight.*
" Brunoniana, *Wight.*
" Lindleyana, *Wight.*
" Wightiana, *Lindl.*
Microstylis Rheedii, *Wight.*
" versicolor, *Wight*
" " var. luteola.
" crenulata, *Ridley.*
Liparis Walkeriæ, *Graham.*
" biloba, *Wight.*
" longipes, *Lindl.*
Liparis viridiflora, *Lindl.*
" resupinata, *Ridley.*
Dendrobium Macræi, *Lindl.*
" microbulbon, *A. Rich.*
" barbatulum, *Lindl.*
" Jerdonianum, *Wight.*
" macrostachyum, *Lindl.*
" aqueum, *Lindl.*
Bulbophyllum albidum, *Hook. f.*
" fusco-purpureum, *Wight.*
" nilgherrense, *Wight.*

ORCHIDEÆ—*cont.*

Bulbophyllum tremulum, *Wight.*
Cirrhopetalum nilgherrense, *Wight.*
,, Gamblei, *Hook, f.*
,, Thomsoni, *Hook, f.*
,, acutiflorum, *A. Rich.*
Chrysoglossum maculatum, *Hook, f.*
Eria reticulata, *Benth.*
,, reticosa, *Wight.*
,, Dalzellii, *Lindl.*
,, nana, *A. Rich.*
,, polystachya, *A. Rich.*
,, pubescens, *Wight.*
,, pauciflora, *Wight.*
Ipsea Malabarica, *Hook, f.*
Acanthephippium bicolor, *Lindl.*
Josephia lanceolata, *Wight.*
,, latifolia, *Wight.*
Coelogyne breviscapa, *Lindl.*
,, odoratissima, *Lindl.*
,, corrugata, *Wight.*
,, glandulosa, *Lindl.*
Pholidota imbricata, *Lindl.*
Calanthe masuca, *Lindl.*
,, veratrifolia, *Br.*
Arundina bambusifolia, *Lindl.*
Eulophia macrostachya, *Lindl.*
,, campestris, *Wall.*
,, nuda, *Lindl.*
,, flava, *Hook, f.*
Cymbidium aloifolium, *Swartz.*
,, bicolor, *Lindl.*
Geodorum dilatatum, *Br.*
Polystachya Wightii, *Reichb, f.*
Luisia teretifolia, *Gaud.*
,, tenuifolia, *Bl.*
Cottonia macrostachya, *Wight.*
Rhynchostylis retusa, *Bl.*
Sarcochilus Wightii, *Hook, f.*
Ærides cylindricum, *Lindl.*
,, crispum, *Lindl.*
,, radicosum, *A. Rich.*
,, lineare, *Hook, f.*
Vanda parviflora, *Lindl.*
,, spathulata, *Sprengl.*
,, Roxburghii, *Br.*
Saccolabium filiforme, *Lindl.*
Saccolabium nilagiricum, *Hook, f.*
,, Wightianum, *Hook, f.*
Sarcanthus peninsularis, *Dalz.*
Cleisostoma tenerum, *Hook, f.*
Diplocentrum recurvum, *Lindl.*
,, congestum, *Wight.*
Podochilus malabaricus, *Wight.*
Corymbis veratrifolia, *Bl.*
Tropidia angulosa, *Bl.*
Anæctochilus regalis, *Bl.*
,, elatior, *Lindl.*
Spiranthes australis, *Lindl.*
Cheirostylis flabellata, *Wight.*
Zeuxine sulcata, *Lindl.*
Goodyera procera, *Hook.*
Pogonia biflora, *Wight.*
Epipogum nutans, *Reichb, f.*
Habenaria barbata, *Wight.*
,, digitata, *Lindl.*
,, rariflora, *A. Rich.*
,, Susannæ, *Br.*
,, Richardiana, *Wight.*
,, cephalotes, *Lindl.*
,, polyoden, *Hook, f.*
,, longicornu, *Lindl.*
,, platyphylla, *Spreng.*
,, plantaginea, *Lindl.*
,, longicalcarata, *A. Rich.*
,, crinifera, *Lindl.*
,, Heyneana, *Lindl.*
,, ovalifolia, *Wight.*
,, viridiflora, *Br.*
,, crassifolia, *A. Rich.*
,, bicornuta, *Hook, f.*
,, malabarica, *Hook, f.*
,, torta, *Hook, f.*
,, robustior, *Hook, f.*
,, Wightii, *Trimen.*
,, galeandra, *Benth.*
,, jantha, *Benth.*
,, Perrottetiana, *A. Rich.*
Satyrium nepalense, *Don.*
,, ,, var. Wightiana.
Disperis zeylanica, *Trimen.*
,, neilgherrensis, *Wight.*

SCITAMINEAÆ.

Globba bulbifera, *Roxb.*
Curcuma neilgherrensis, *Wight.*
,, aromatica, *Salisb.*
Kæmpferia rotunda, *L.*
Hedychium coronarium, *Kœnig.*
,, venustum, *Wight.*
Amomum cannæcarpum, *Benth.*
Zingiber Wightianum, *Thw.*

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APPENDIX I.

SCITAMINEÆ—*cont.*

Zingiber Zerumbet, *Smith.*
Costus speciosus, *Smith.*
Elettaria Cardamomum, *Maton.*
Alpinia Allughas, *Rosc.*
Clinogyne virgata, *Benth.*
Phrynium capitatum, *Willd.*
Canna indica, *L.*
Musa rosacea, *Jacq.*

HÆMODORACEÆ.

Peliosanthes neilgherriensis, *Wight.*
Ophiopogon intermedius, *Don.*
Sansevieria Roxburghiana, *Schult.*

AMARYLLIDEÆ.

Hypoxis aurea, *Lour.*
Curculigo Finlaysoniana, *Wall.*
Curculigo orchioides, *Gærtn.*
Crinum deflexum, *Ker.*

DIOSCOREACEÆ.

Dioscorea tomentosa, *Heyne.*
„ pentaphylla, *L.*
Dioscorea oppositifolia, *L.*

LILIACEÆ.

Smilax aspera, *L.*
„ zeylanica, *L.*
„ macrophylla, *Roxb.*
„ Wightii, *A. DC.*
Asparagus Rottleri, *Baker.*
„ subulatus, *Steud.*
„ racemosus, *Willd.*
„ rubricaulis, *Baker.*
Chlorophytum Heyneanum, *Wall.*
„ tuberosum, *Baker.*
„ laxum, *Br.*
Scilla indica, *Baker.*
Lilium neilgherrense, *Wight.*
Iphigenia indica, *Kunth.*
Gloriosa superba, *L.*
Disporum Leschenaultianum, *Don.*

PONTEDERIACEÆ.

Monocharia hastæfolia, *Presl.*
Monocharia vaginalis, *Presl.*

XYRIDEÆ.

Xyris indica, *L.*
Xyris schœnoides, *Mart.*

COMMELINACEÆ.

Pollia sorzogonensis, *Endl.*
Commelina salicifolia, *Roxb.*
„ benghalensis, *L.*
„ hirsuta, *Clarke.*
„ glabra, *Clarke.*
„ paleata, *Hassk.*
„ Kurzii, *Clarke.*
Aneilema lineolatum, *Kunth.*
„ spiratum, *Br.*
„ nudiflorum, *Br.*
„ sinicum, *Lindl.*
„ giganteum, *Br.*
Aneilema Koenigii, *Wall.*
„ montanum, *Wight.*
„ ovalifolium, *Hook, f.*
Cyanotis cristata, *Schultes, f.*
„ tuberosa, *Schultes, f.*
„ Wightii, *Clarke.*
„ arachnoidea, *Clarke.*
„ pilosa, *Schultes, f.*
„ villosa, *Schultes, f.*
„ fasciculata, *Schultes, f.*
„ axillaris, *Roem & Sch.*
Floscopa scandens, *Lour.*

JUNCACEÆ.

Juncus glaucus, *Ehrh.*
„ prismatocarpus, *Br.*
Luzula campestris, *DC.*

PALMEÆ.

Areca Catechu, *L.* Cultivated.
Pinanga Dicksonii, *Bl.*
Arenga Wightii, *Griff.*
Caryota urens, *Linn.*
Phœnix sylvestris, *Roxb.*
Phœnix farinifera, *Roxb.*
Calamus Rotang, *L.*
" travancoricus, *Bedd.*
" Huegelianus, *Mart.*
" Gamblei, *Becc.*

PANDANEÆ.

Pandanus fascicularis, *Lamk.*

AROIDEÆ.

Arisæma tortuosum, *Schott.*
" neglectum, *Schott.*
" Leschenaultii, *Schott.*
" Wightii, *Schott.*
Typhonium divaricatum, *Decne.*
Amorphophallus campanulatus, *Bl.*
Amorphophallus dubius, *Bl.*
Remusatia vivipara, *Schott.*
Colocasia Antiquorum, *Schott.*
Rhaphidophora pertusa, *Schott.*
Pothos scandens, *L.*
Acorus Calamus, *L.*

ALISMACEÆ.

Limnophyton obtusifolium, *Miq.*

NAIADACEÆ.

Aponogeton crispum, *Thunb.*

ERIOCAULEÆ.

Eriocaulon robustum, *Steud.*
" melaleucum, *Mart.*
" Brownianum, *Mart.*
Eriocaulon sexangulare *Linn.*
" collinum, *Hook, f.*

CYPERACEÆ.

Kyllinga triceps, *Rottb.*
" cylindrica, *Nees.*
" melanosperma, *Nees.*
" brevifolia, *Rottb.*
" monocephala, *Rottb.*
Pycreus capillaris, *Nees.* var. nilagiricus.
" " var. puncticulatus, *Nees.*
Juncellus alopecuroides, *C. B. Clarke.*
Cyperus difformis, *L.*
" compressus, *L.*
" aristatus, *Rottb.*
" Iria, *L.*
" distans, *L.f.*
" rotundus, *L.*
" subcapitatus, *C. B. Clarke.*
" digitatus, *Roxb.*
Mariscus Dregeanus, *Kunth.*
" cyperinus, *Vahl.*
Eleocharis plantaginea, *Br.*
" capitata, *Br.*
Fimbristylis polytrichoides, *Vahl.*
" Kingii, *C. B. Clarke.*
" subtrabeculata, *C. B. Clarke.*
" schoenoides, *Vahl.*
" dichotoma, *Vahl.*
" diphylla, *Vahl.*
" argentea, *Vahl.*
" monticola, *Steudl.*
" quinquangularis, *Kunth.*
" miliacea, *Vahl.*
" uliginosa, *Steudl.*
" monostachya, *Hassk.*
" barbata, *Kunth.*
Bulbostylis barbata, *Heyne.*
" capillaris, *Kunth.*
" puberula, *Kunth.*
Scirpus fluitans, *L.*
" erectus, *Poir.*
" subcapitatus, *Thw.*
" squarrosus, *L.*

CYPERACEÆ—*cont.*

Fuirena pubescens, *Kunth.*
,, glomerata, *Lam.*
,, umbellata, *Rottb.*
Lipocarpha sphacelata, *Kunth.*
Scleria lithosperma, *Sw.*
,, corymbosa, *Roxb.*
,, tessellata, *Willd.*
Carex nubigena, *D. Don.*
,, muricata, *L.* var. foliosa.
,, longipes, *Don.* var. dissitiflora.
,, brunnea, *Thunb.*
Carex longicruris, *Nees.*
,, phacotá, *Sprengl.*
,, filicina, *Nees.*
,, mercarensis, *Hochst.*
,, Lindleyana, *Nees.*
,, Myosurus, *Nees.*
,, Walkeri, *Arnott.*
,, maculata, *Boott.*
,, vicinalis, *Boott.*
,, breviculmis, *Br.*
,, ligulata, *Nees.*

GRAMINEÆ.

Paspalum scrobiculatum, *L.*
,, compactum, *Roth.*
,, sanguinale, *Lamk.*
,, ,, var. ciliare.
,, ,, var. Griffithii.
,, longiflorum, *Retz.*
,, pedicellare, *Trin.*
,, Perrottetii, *Hook, f.*
Isachne Kunthiana, *W. & A.*
,, australis, *Br.*
,, dispar, *Trin.*
,, Walkeri, *W. & A.*
,, Gardneri, *Benth.*
Panicum Crus—galli, *L.*
,, prostratum, *Lamk.*
,, villosum, *Lamk.*
,, javanicum, *Poir.*
,, setigerum, *Retz.*
,, indicum, *L.*
,, montanum, *Roxb.*
,, plicatum, *Lamk.*
,, trigonum, *Retz.*
,, pilipes, *Nees & Arn.*
,, patens, *L.*
,, longipes, *Wight.*
,, uncinatum, *Raddi.*
Oplismenus undulatifolius, *Beauv.*
,, compositus, *Beauv.*
,, Burmannii, *Beauv.*
Arundinella setosa, *Trin.*
,, Metzii, *Hochst.*
,, villosa, *Arn & Steud.*
,, fuscata, *Nees.*
,, leptochloa, *Hook, f.*
,, Lawsoni, *Hook, f.*
Setaria glauca, *Beauv.*
,, intermedia, *Roem & Sch.*
Pennisetum Alopecuros, *Steud.*
Oryza sativa, *L.*
Perotis latifolia, *Ait.*
Dimeria pusilla, *Thw.*
,, ornithopoda, *Trin.*
Imperata arundinacea, *Cyrili.*
Pollinia articulata, *Trin.*
,, argentea, *Trin.*
,, phæothrix, *Hack.*
,, ciliata, *Trin.*
Sachcharum spontaneum, *L.*
Ischaemum aristatum, *L.*
,, pilosum, *Hack.*
,, semisagittatum. *Roxb.*
,, commutatum, *Hack.*
,, muticum, *L.*
,, ciliare, *Retz.*
,, hirtum, *Hack.*
Pogonatherum crinitum, *Trin.*
Apocopis pallida, *Hook, f.*
Arthraxon lanceolatus, *Hochst.*
,, ciliaris, *Beauv.*
,, microphyllus, *Hochst.*
Apluda varia, *Hack.*
Rottboellia exaltata, *L. f.*
,, perforata, *Roxb.*
Manisuris granularis, *L. f.*
Andropogon longipes, *Hack.*
,, pertusus, *Willd.*
,, Foulkesii, *Hook, f.*
,, micranthus, *Kunth.*
,, Schmidii, *Hook, f.*
,, halepensis, *Brot.*
,, aciculatus, *Retz.*
,, Wightianus, *Steud.*
,, Zeylanicus, *Nees.*
,, monticola, *Schultes.*
,, Hackelii, *Hook. f.*
,, caricosus, *L.*
,, annulatus, *Forsk.*
,, contortus, *L.*
,, oliganthus, *Hochst & Steud.*

GRAMINEÆ—*cont.*

Andropogon Schoenanthus, *L.*
" Nardus, *L.*
" lividus, *Thw.*
Anthistiria imberbis, *Retz.*
" ciliata, *Linn. f.*
" tremula, *Nees.*
" cymbaria, *Roxb.*
Aristida Adscenscionis, *L.*
Aristida Hystrix, *L. f.*
Garnotia Schmidii, *Hook. f.*
" stricta, *Brongn.*
" arundinacea, *Hook, f.*
" courtallensis, *Thw.*
Sporobolus diander, *Beauv.*
" piliferus, *Kunth.*
Agrostis alba, *L.*
" canina, *L.*
Calamagrostis pilosula, *Hook f.*
" Schmidii, *Hook, f.*
Zenkeria elegans, *Trin.*
Cœlachne pulchella, *Br.*
Microchloa setacea, *Br.*
Entoropogon melicoides, *Nees.*
Tripogon capillatus, *Jaub & Spach.*
" bromoides, *Roth.*
Cynodon Dactylon, *Pers.*
Chloris virgata, *Sw.*
Chloris barbata, *Sw.*
" polystachya, *Roxb.*
Eleusine indica *Gærtn.*
" aegyptiaca, *Desf.*
Dinebra arabica, *Jacq.*
Leptochloa uniflora, *Hochst.*
Arundo Donax, *L.*
Eragrostis tenella, *Roem & Sch.*
" amabilis, *W & A.*
" elegantula, *Steudl.*
" elongata, *Jacq.*
" major, *Hochst.*
Eragrostis Willdenoviana, *Nees.*
" tenuifolia, *Hochst.*
" bifaria, *Wight & Steud.*
Briza media, *L.*
" maxima, *L.*
Poa annua, *L.*
Bromus asper, *Murray.*
Oropetium Thomaeum, *Trin.*
Arundinaria Wightiana, *Nees.*
Bambusa arundinaceæ, *Willd.*
Oxytenanthera Thawaitesii, *Munro.*
Dendrocalamus strictus, *Nees.*
Teinostachyum Wightii, *Bedd.*
Ochlandra Rheedii, *Benth.*

CRYPTOGAMS.

LYCOPODIACEÆ.

Lycopodium Hamiltonii, *Spr.*
" serratum, *Thunb.*
" setaceum, *Hamilt.*
" carinatum, *Desq.*
Lycopodium Phlegmaria, *L.*
" cernuum, *L.*
" Wightianum, *Wall.*
Psilotum triquetrum, *Sw.*

SELAGINELLACEÆ.

Selaginella rupestris, *Spring.*
" vaginata, *Spring.*
" atroviridis, *Spring.*
" flaccida, *Spring.*
Selaginella bryopteris, *Baker.*
" inequalifolia, *Spring.*
" caulescens, *Spring.*
" Pennula, *Spring.*

FILICES.

Cyathea spinulosa, *Wall.*
Alsophila latebrosa, *Hook.*
" glabra, *Hk.*
Gleichenia linearis, *Burm.*
Alsophila crinita, *Hk.*

Hymenophyllum exsertum, *Wall.*
" polyanthos, *Sw.*
" javanicum, *Spr.*
Trichomanes exiguum, *Bedd.*
" neilgherrense, *Bedd.*
Trichomanes parvulum, *Poir.*
" proliferum, *Bl.*
" bipunctatum, *Poir.*
" pyxidiferum, *L.*
" rigidum, *Sw.*

FILICES—*cont.*

Humata pedata, *Sm.*
Leucostegia immersa, *Wall.*
,, pulchra, *Don.*
Davallia bullata, *Wall.*
Microlepia platypylla, *Don.*
,, strigosa, *Sw.*
,, hirta, *Kaulf.*
Stenoloma chinensis, *Sw.*

Lindsaya cultrata, *Sw.*
Schizoloma lobata, *Poir.*
Schizoloma ensifolia, *Sw.*
,, heterophylla, *Dry.*

Adiantum caudatum, *L.*
,, capillus-veneris, *L.*
,, Æthiopicum, *L.*
,, hispidulum, *Sw.*
Cheilanthus mysorensis, *Wall.*
,, tenuifolia, *Sw.*
,, farninosa, *Kaulf.*
,, *var.* Dalhousiæ.
Pellæa concolor, *Langs & Fisch.*
,, Boivini, *Hk.*
,, falcata, *Fee.*
Pteris longifolia, *L.*
,, cretica, *L.*
Pteris pellucida, *Presl.*
,, ensiformis, *Burm.*
,, quadriaurita, *Retz.*
,, ,, *var.* argenta.
,, ,, *var.* aspericaulis.
,, patens, *Hook.*
,, longipes, *G. Don.*
,, aquilina, *L.*
Campteria biaurita, *L.*
,, Kleiniana, *Presl.*
Ceratopteris thalictroides, *L.*
Lomaria Patersoni, *Spr.*
Blechnum orientale, *L.*

Thamnopteris nidus, *L.*
,, *var.* phyllitidis.
Asplenium ensiforme, *Wall.*
,, Trichomanes, *L.*
,, normale, *Don.*
,, Wightianum, *Wall.*
,, lunulatum, *Sw.*
,, Zenkerianum, *Kze.*
,, auritum, *Sw.*
,, crinicaule, *Hance.*
,, falcatum, *Lamk.*
,, macrophyllum, *Sw.*
,, caudatum, *Forst.*
,, formosum, *Willd.*
,, unilaterale, *Lamk.*
,, heterocarpum, *Wall.*
,, laciniatum, *Don.*
,, furcatum, *Thunb.*
Asplenium nitidum, *Sw.*
,, fontanum, *Bernh. var. Exiguum.*
,, varians, *Hk. & Grev.*
,, tenuifolium, *Don.*
Athyrium Hohenackerianum, *Kze.*
,, macrocarpum, *Bl.*
,, nigripes, *Mett.*
,, selenopteris, *Kunze.*
Diplazium sylvaticum, *Presl.*
,, japonicum, *Thunb.*
,, polypoidioides, *Mett.*
,, asperum, *Bl.*
,, latifolium, *Don.*
,, umbrosum, *J. Sm.*
,, *var.* australe.
Anisogonium esculentum, *Presl.*
Actiniopteris dichotoma, *Forsk.*

Polystichum auriculatum, *L.*
,, aculeatum, *Sw.*
,, ,, *var.* angulare.
Cyrtomium falcatum, *Sw. var.* caryotideum, *Wall.*
Aspidium polymorphum, *Wall.*
Aspidium decurrens, *Presl.*
,, cicutarium, *Sw.*
Lastræa aristata, *Sw.*
,, coniifolia, *Wall.*
,, hirtipes, *Bl.*
,, gracilescens, *Bl.*

FILICES—*cont.*

Lastræa calcarata, *Hk.*
" " *var.* falciloba, *Hk.*
" ochthodes, *Kze.*
" tylodes, *Kze.*
" thelypteris, *Desv.*
" syrmatica *Willd.*
" Filixmass *L.var.* patentissima.
" " *var.* elongata.
" " *var.* cochleata.
" sparsa, *Don.*
" crenata, *Forsk.*
" dissecta, *Forst.*
" scabrosa, *Kze.*
" ferruginea, *Bedd.*
Lastræa Boryana, *Willd.*
" tenericaulis, *Wall.*
Nephrodium Otaria, *Kze.*
" unitum, *L.*
" pteroides, *Retz.*
" extensum, *Bl.*
" cucullatum, *Bl.*
" arbuscula, *Desv.*
" pennigerum, *Bl.*
" molle, *Desv.*
" truncatum, *Presl.*
Nephrolepis cordifolia, *L.*
" exaltata, *L.*
Oleandra musæfolia, *Kze.*

Phegopteris distans, *Don.*
" ornata, *Wall.*
" punctata, *Thunb.*
Polypodium parasiticum, *Mett.*
" subfalcatum, *Bl.*
Niphobolus adnascens, *Sw.*
" fissus, *Bl.*
Drynaria quercifolia, *L.*
Pleopeltis linearis, *Thunb.*
" lanceolata, *L.*
" membranacea, *Don.*
" punctata, *L.*
" hastata, *Thunb.*
" nigrescens, *Bl.*
" leiorhiza, *Wall.*

Leptogramme Totta, *Schl.*
Gymnogramma leptophylla, *Desv.*
Loxogramme lanceolata, *Sw.*
" involuta, *Don.*
Meniscium triphyllum, *Sw.*
Antrophyum reticulatum, *Kaulf.*
" plantagineum, *Kaulf.*
Vittaria elongata, *Sw.*
" lineata, *Sw.*
Drymoglossum piloselloides, *Presl.*
Hemionitis arifolia, *Burm.*

Elaphoglossum, conforme, *Sw.*
" latifolium, *Sw.*
" stigmatolepis, *Fee.*
" viscosum, *Sw.*
Stenochlæna palustre, *L.*
Polybotrya appendiculata, *Willd.*
Polybotrya appendiculata *var.* asplenii-folia.
Gymnopteris lanceolata, *Hk.*
" axillaris, *Cav.*
" contaminans, *Wall.*

Osmunda regalis, *L.*

Anemia tomentosa, *Sw.*
Lygodiam microphyllum, *R.Br.*
Lygodiam flexuosum, *Sw.*

Angiopteris evecta, *Hoffen.*
Marattia fraxinea, *Sm.*

JUNGERMANNIACEÆ—(SCALE MOSSES).

Plagiochila dichotoma, *Nees.*
Lophocolea muricata, *Nees.*
Gottschea aligera, *Nees.*
" glaucescens,[1] *Nees.*
Madotheca Perrottetii, *Mont.*
" Nilgiriensis, *Mont.*
" ligulifera, *Taylor.*
" acutifolia, *Lehm. & Ldbg.*

JUNGERMANNIACEÆ—(SCALE MOSSES)—*cont.*

Lejeunia minutissima, *Dumort.*
„ cucullata, *Nees.*
„ Nilgiriana, *Gottsche.*
Frullania glomerata, *L. & Ldbg.*
„ Wallichiana, *Mitten.*
acutiloba, *Mitten.*
„ moniliata, *Nees.*
Steetzia crispata, *Nees.*
Dumortiera hirsuta, *Nees.*
Marchantia nitida, *L.*
Fimbriaria leptophylla, *Mont.*
Riccia fluitans, *Linn.*
Sendtnera dicrana, *Tayl.*
Gymnomitrium lutescens, *Mitt.*

EQUISETACEÆ.

Equisetum debile, *Roxb.*
Equisetum, sp.

MARSILEACEÆ.

Marsilea quadrifolia, *L.*

BRYACEÆ—(URN MOSSES).

TRIBE I.—DICRANACEÆ.

Pleuridium denticulatum, *Mitt.*
Leptotrichum phascoides, *Mitt.*
„ plicatum, *C. Müller.*
„ Schmidii, *C. Müller.*
Trematodon Schmidii, *C. Müller.*
„ paucifolius, *C. Müller.*
„ sp.
Cynontodium amænum, *T. & Mitt.*
Pæcilophyllum tenerum, *Mitt.*
„ Taylori, *Mitt.*
„ nitens, *Mitt.*
„ amœne-virens, *Mitt.*
Campylopus recurvus, *Mitt.*
„ Goughii, *Mitt.*
Campylopus Nilgiriensis, *Mitt.*
„ albescens, *C. Müller.*
„ densus, *Schl.*
„ latinerve, *Mitt.*
„ flagelliferus, *C. Müller.*
„ involutus, *C. Müller.*
„ caudatus, *C. Müller.*
„ ericetorum, *Mitt.*
„ tricolor, *C. Müller.*
„ erythrognaphalon, *C. Müller.*
„ Schmidii, *C. Müller.*
„ nodiflorus, *C. Müller.*
„ nitidus, *Mitt.*
Didymodon stenocarpus, *Mitt*

TRIBE II.—GRIMMIEÆ.

Grimmia ovata, *Web. and Mohr.*
„ Nilgiriensis, *C. Müller.*
Glyphomitrium (Brachysteleum) tortua, *C. Müller.*

TRIBE III.—LEUCOBRYEÆ.

Octoblepharum albidum, *Hedw.*
Leucobryum Javense, *Mitt.*
„ Wightii, *Mitt.*
Leucobryum Nilgiriensis.
„ Bowringii, *Mitt.*

TRIBE IV.—SYRRHOPODONTEÆ.

Calymperes sp.

TRIBE V.—TORTULEÆ.

Weissia (Gymnostoma) involuta, *Hook.*
Tortula orthodonta, *Müller.*
„ stenophylla, *Mitt.*
Tortula augustata, *Mitt.*
„ (Syntrichia) Schmidii, *C. Müller.*
Anœctangium Schmidii, *C. Müller.*

TRIBE VI.—ORTHOTRICHEÆ.

Zygodon acutifolius, *C. Müller.*
„ cylindricarpus, *C. Müller.*
„ tetragonostomus, *Braun.*
Ulota Schmidii, *Mitt.*
Orthotrichumn ; sp. (No. 458 *Herb Bed.*)
Macromitrium Perrottetii, *C. Müller.*
[illegible] *C. Müller.*
Macromitrium Schmidii, *C. Müller.*
„ Muellerianum, *Mitt.*
„ sulcatum, *Brid.*
„ uncinatum, *C. Müller.*
„ fasciculare, *Mitt.*
„ Nilgiriensis, *C. Müller.*
[illegible]

TRIBE VII.—FUNARIEÆ.

Entosthodon Buseanus, *Mitt.*
„ Perrottetii, *Mitt.*
„ physcomitrioides, *Müller*
„ diversinervis, *Müller.*

Entosthodon submarginatus, *Müller.*
Funaria connivens, *Müller.*
„ hygrometrica, *Dill.*

TRIBE VIII.—SPLACHNEÆ.

Tayloria subglabrata, *Mitt.*

TRIBE IX.—BARTRAMIEÆ.

Bartramia (Philonotis) Roylei, *Mitt.*
„ „ pseudofontana, *Müller.*
„ „ falcata, *Mitt.*

Bartramia (Philonotis) macrocarpa, *Müller*
„ „ subpellucida, *Mitt.*
„ (Breutelia) Indica, *Mitt.*
„ „ dicranacea, *Müller.*

TRIBE X.—BRYEÆ.

Bryum giganteum, *Hook.*
„ Wightii, *Mitt.*
„ argenteum, *Linn.*
„ ramosum, *Hook.*
„ Schmidii, *C. Müller.*
„ Harveyanum, *C. Müller.*
„ flaccidisetum, *C. Müller.*
„ Montagneanum, *C. Müller.*
„ rugosum, *C. Müller.*
„ porphyrioneuron, *C. Müller.*
„ alpinum, *L.*
„ lamprostegum, *C. Müller.*
„ (Dicranobryum) Weissiæ, *Mitt.*

Bryum (Brachymenium) velutinum, *C. Müller.*
„ („) clavariæforme, *C. Müller.*
„ („) Nepalense, *Hook.*
„ leptostomoides, *C. Müller.*
„ apalodictyoides, *C. Müller.*
„ Zollingeri, *Duby.*
„ medianum, *Mitt.*
Mnium rostratum, *Schr.*
„ rhyncophorum, *Hook.*
Rhizogonium spiniforme, *Brach.*
Anomodon planatus? *Mitt.*

TRIBE XI.—HYPOPTERYGIEÆ.

Hypopterygium tenellum, *C. Müller.*
Hypopterygium struthiopteris, *Brid.*

TRIBE XII.—RHACOPILEÆ.

Rhacopilum Schmidii, *C. Müller.*

TRIBE XIII.—HOOKERIEÆ.

Lepidopilum Ootacamandianum, *Mont.*
Distichophyllum (Mniadelphus) Montagnei, *C. Müller.*

Distichophyllum (Mniadelphus) succulentum, *Mitt.*
Hookeria (Calliostella) flabellata, *Mitt.*

TRIBE XIV.—ERPODIEÆ.

Aulacopilum tumidulum, *Thw. and Mitt.*
Erpodium n : sp.

TRIBE XV.—NECKEREÆ.

Hedwigia Indica, *C. Müller.*
Cryphœa (Braunia) Indica, *Mitt.*
„ (Dendropogon) ferruginea, *Mitt.*
Phyllogonium elegans, *Hook and Wils.*
Pterobryum involutum, *T. and Mitt.*
„ [illegible], *Thw. and Mitt.*

Pterobryum tumidum, *Mitt.*
Cyrtopus frondosus, *Mitt.*
Meteorium fuscescens, *Mitt.*
„ blandum, *Mitt.*
„ squarrosum, *Mitt.*
„ floribundum, *D. and M.*
„ flexipes, *Mitt.*
„

CHAP. I.
APPENDIX I.

TRIBE XV.—NECKERBÆ—*cont.*

Meteorium Foulkesianum, *Mitt.*
" reclinatum, *Mitt.*
" hispidum, *Mitt.*
" auro-nitens, *Mitt.*
" convolvens, *Mitt.*
" punctulatum, *C. Müller.*

Meteorium Schmidii, *C. Müller.*
" filamentosum, *Mitt.*
" cuspidiferum, *Mitt.*
Neckera Montagneana, *C. Müller.*
" Goughiana, *Mitt.*
" æqualifolia, *C. Müller.*

NEEKEREÆ.

Neckera arcuans, *Mitt.*
" Schmidii, *Mitt.*
" parvula, *Mitt.*
Porotrichum ligulæfolium, *Mitt.*

Neckera sp.
" fruticosum, *Mitt.*
Homalia Targioniana, *Mitt.*

TRIBE XVI.—SEMATOPHYLLEÆ.

TRIBE XVII.—STEREODONTEÆ.

Stereodon (Taxicaulis) albescens, *Mitt.*
" " Ivoreanus, *Mitt.*
" subhumilis, *C. Müller.*
" leptorhynchoides, *Mitt.*

Stereodon (Symphyodon) Perrottetii, *Mitt.*
Entodon policatus, *C. Müller.*
" (Leptohymenium) juliformis, *Mitt.*

TRIBE XVIII.—HYPNEÆ.

Fobronia secunda, *Mont.*
" Goughii, *Mitt.*
" Schmidii, *C. Müller.*
Eypnum discriminatum, *Mont.*
" Wightii, *Mitt.*
" Bonplandi, *Mitt.*
" plumosum, *Mitt.*
" lychnitis, *C. Müller.*
" procumbens, *Mitt.*
" humillimum, *Mitt.*
" Buchanani, *Hook.*
Rhegmatodon orthostegius, *Mont.*
Trachypus crispatulus, *Mitt.*

Trachypus bicolor, *Schw.*
" atratus, *Mitt.*
" Buchanani, *C. Müller.*
" plicæfolius, *C. Müller.*
" brevirameus, *C. Müller.*
Thuidium cymbifolium, *Dozy and M.*
" glaucinum, *Mitt.*
" blepharophylla, *C. Müller.*
" pristocalyx, *C. Müller.*
" tamariscella, *C. Müller.*
Pleuropus Nilagirensis, *Mitt.*
Leskea consanguinea, *Mont.*
" prionophylla, *Mitt.*

TRIBE XIX.—SKITOPHYLLEÆ.

Fissidens anomalus, *Mont.*
" Schmidii, *C. Müller.*

Fissidens serratus, *C. Müller.*
" Ceylonensis, *Dozy and M.*

TRIBE XX.—POLYTRICHEÆ.

Pogonatum Neesii, *C. Müller.*
" microstomum, *Br.*
" aloides, *Brid.*

Pogonatum hexagonum, *Mitt.*
Polytrichum perichætiale, *Mont.*

TRIBE XXI.—BUXHAUMIEÆ.

Diphyscium sp.

Diphyscium sp.

LICHENALES.

There are numerous lichens on these hills, but they have never been worked out.

FUNGALES.

Fungi are numerous, but little is known about them.

APPENDIX II.

Mammalia.

ORDER PRIMATES.

FAMILY SIMIIDÆ.

Macacus silenus.	*Lion-tailed Monkey.*
Semnopithecus priamus.	*Madras Langur.*
" johni.	*Nilgiri Langur.*

ORDER CARNIVORA.

FAMILY FELIDÆ.

Felis tigris.	*Tiger.*
" pardus.	*Leopard or Panther.*
" bengalensis.	*Leopard-Cat.*
" chaus.	*Jungle-Cat.*

FAMILY VIVERRIDÆ.

Paradoxurus niger.	*Indian Palm-Civet.*
" jerdoni.	*Brown Palm-Civet.*
Herpestes smithi.	*Ruddy Mungoose.*
" fuscus.	*Nilgiri Brown Mungoose.*
" vitticollis.	*Stripe-necked Mungoose.*

FAMILY CANIDÆ.

Canis aureus.	*Jackal.*
Cyon dukhunensis.	*Indian wild Dog.*

FAMILY MUSTELIDÆ.

Mustela flavigula.	*Indian Marten.*
Lutra leptonyx.	*Clawless Otter.*

FAMILY URSIDÆ.

Melursus ursinus.	*Sloth Bear or Indian Bear.*

ORDER INSECTIVORA.

FAMILY ERINACEIDÆ.

Erinaceus micropus.	*South-Indian Hedge hog.*

FAMILY SORICIDÆ.

Crocidura murina.	*Brown Musk-Shrew.*
" perrotteti.	*Indian Pigmy-Shrew.*

ORDER CHIROPTERA.

FAMILY RHINOLOPHIDÆ.

Rhinolophus petersi.	*Peters's Horse-shoe Bat.*
Hipposiderus bicolor.	*Bicoloured leaf-nosed Bat.*

FAMILY VESPERTILIONIDÆ.

Nycticejus kuhli.	*Common yellow Bat.*

ORDER RODENTIA.

FAMILY SCIURIDÆ.

Pteromys oral.	*Large brown Flying-Squirrel.*
Sciuropterus fuscicapillus.	*Small Travancore Flying-Squirrel.*
Sciurus indicus.	*Large Indian Squirrel.*
(Varieties.	*Sciurus Elphinstionii and Sciurus Malabaricus*).
Sciurus macrurus.	*Grizzled Indian Squirrel.*
" palmarum.	*Palm Squirrel or common striped Squirrel.*
" tristriatus.	*Jungle Striped Squirrel.*
" sublineatus.	*Dusky Striped Squirrel.*

FAMILY MURIDÆ.

Platacanthomys lasiurus.	*Malabar Spiny Mouse.*
Vandeleuria oleracea.	*Long-tailed Tree-Mouse.*
Mus rattus.	*Common Indian Rat.*
" blanfordi.	*White-tailed Rat.*
" musculus.	*Common House Mouse.*
Nesocia bengalensis.	*Indian Mole Rat.*
Golunda ellioti.	*The Indian Bush-Rat.*

FAMILY HYSTRICIDŒ.

Hystrix leucura.	*Indian Porcupine.*

FAMILY LEPORIDÆ.

Lepus nigricollis.	*Black-naped Hare.*

ORDER UNGULATA.

FAMILY ELEPHANTIDÆ.

Elephas maximus.	*Indian Elephant.*

FAMILY BOVIDÆ.

Bos gaurus.	*Gaur.*
Hemitragus hylocrius.	*Nilgiri wild Goat.*
Tetracerus quadricornis.	*Four-horned Antelope.*

FAMILY CERVIDÆ.

Cervulus muntjac.	*Rib-faced Deer or Barking Deer.*
Cervus unicolor.	*Sambhar or Rusa Deer.*
" axis.	*Spotted Deer.*

FAMILY TRAGULIDÆ.

Tragulus meminna.	*Indian Chevrotain or Mouse-Deer.*

APPENDIX III.

Birds.

ORDER PASSERES.

FAMILY CORVIDÆ.

Corvus macrorhynchus.	*Jungle Crow.*
Dendrocitta rufa.	*Indian Tree-pie.*
,, leucogastra.	*Southern Tree-pie.*
Parus atriceps.	*Indian Grey Tit.*
Machlolophus haplonotus.	*Southern Yellow Tit.*

FAMILY CRATEROPODIDÆ.

Garrulax delesserti.	*Wynaad Laughing-Thrush.*
Trochalopterum cachinnans.	*Nilgiri Laughing-Thrush.*
,, jerdoni.	*Banasore Laughing-Thrush.*
Argya malcolmi.	*Large Grey Babbler.*
,, subrufa.	*Large Rufous Babbler.*
Crateropus canorus.	*Jungle Babbler.*
,, striatus.	*Southern Indian Babbler.*
Pomatorhinus horsfieldii.	*Southern Scimitar Babbler.*
Pyctorhis sinensis.	*Yellow-eyed Babbler.*
Alcippe phæocephala.	*Nilgiri Babbler.*
Rhopocichla atriceps.	*Black-headed Babbler.*
Myiophoneus horsfieldi.	*Malabar Whistling-Thrush.*
Larvivora brunnea.	*Indian Blue Chat.*
Brachypteryx rufiventris.	*Rufous-bellied Short-wing.*
Zosterops palpebrosa.	*Indian White-eye.*
Ægithina tiphia.	*Common Iora.*
Chloropsis malabarica.	*Malabar Chloropsis.*
,, jerdoni.	*Jerdon's Chloropsis.*
Irena puella.	*Fairy Blue-bird.*
Hypsipetes ganeesa.	*Southern Indian Black Bulbul.*
Molpastes hæmorrhous.	*Madras Red-vented Bulbul.*
Otocompsa fuscicaudata.	*Southern Red-whiskered Bulbul.*
Iole icterica.	*Yellow-browed Bulbul.*
Pycnonotus gularis.	*Ruby-throated Bulbul.*
Micropus phæocephalus.	*Grey-headed Bulbul.*
Kelaartia penicillata.	*Yellow-eared Bulbul.* (?)

FAMILY SITTIDÆ.

Sitta castaneiventris.	*Chestnut-bellied Nuthatch.*
[illegible]	*Velvet-fronted Blue Nuthatch.*

CHAP. I. APPENDIX III.

ORDER PASSERES—*cont.*

FAMILY DICRURIDÆ.

Dicrurus longicaudatus.	*Indian Ashy Drongo.*
,, cærulescens.	*White-bellied Drongo.*
Chaptia ænea.	*Bronzed Drongo.*
Dissemurus paradiseus.	*Larger Racket-tailed Drongo.*

FAMILY SYLVIIDÆ.

Acrocephalus dumetorum.	*Blyth's Reed-Warbler.*
Orthotomus sutorius.	*Indian Tailor-bird.*
Franklinia gracilis.	*Franklin's Wren-Warbler.*
Schœnicola platyura.	*Broad-tailed Grass-Warbler.*
Chætornis locustelloides.	*Bristled Grass-Warbler.*
Hypolais rama.	*Syke's Tree-Warbler.*
Acanthopneuste lugubris.	*Dull-Green Willow-Warbler.*
Prinia socialis.	*Ashy Wren-Warbler.*
,, sylvatica.	*Jungle Wren-Warbler.*
,, inornata.	*Indian Wren-Warbler.*
,, jerdoni.	*Southern Wren-Warbler.*

FAMILY LANIIDÆ.

Lanius vittatus.	*Bay-backed Shrike.*
,, erythronotus.	*Rufous-backed Shrike.*
Hemipus picatus.	*Black-backed Pied Shrike.*
Tephrodornis sylvicola.	*Malabar wood-Shrike.*
Pericrocotus speciosus.	*Indian scarlet Minivet.*
,, flammeus.	*Orange Minivet.*
,, brevirostris.	*Short-billed Minivet.*
,, erythropygius.	*White-bellied Minivet.*
Campophaga sykesi.	*Black-headed Cuckoo-Shrike.*

FAMILY ORIOLIDÆ.

Oriolus kundoo.	*Indian Oriole.*
,, melanocephalus.	*Indian Black-headed Oriole.*

FAMILY EULABETIDÆ.

Eulabes religiosa.	*Southern Grackle.*

FAMILY STURNIDÆ.

Pastor roseus.	*Rose-coloured Starling.*
Sturnia blythii.	*Blyth's Myna.*
Acridotheres tristis.	*Common Myna.*
Æthiopsar fuscus.	*Jungle Myna.*

ORDER PASSERES—*cont.*

FAMILY MUSCICAPIDÆ.

Siphia parva.	*European Red-breasted Flycatcher.*
,, albicilla.	*Eastern Red-breasted Flycatcher.*
Cyornis pallidipes.	*White-bellied Blue Flycatcher.*
Stoparola melanops.	*Verditer Flycatcher.*
,, albicaudata.	*Nilgiri Blue Flycatcher.*
Alseonax ruficaudus.	*Rufous-tailed Flycatcher.*
Ochromela nigrirufa.	*Black-and-Orange Flycatcher.*
Culicicapa ceylonensis.	*Grey-headed Flycatcher.*
Terpsiphone paradisi.	*Indian Paradise Flycatcher.*
Hypothymis azurea.	*Indian Black-naped Flycatcher.*
Rhipidura pectoralis.	*White-spotted Fantail Flycatcher.*

FAMILY TURDIDÆ.

Pratincola atrata.	*Southern Pied Bush-Chat.*
,, maura.	*Indian Bush-Chat.*
Ruticilla rufiventris.	*Indian Redstart.*
Copsychus saularis.	*Magpie-Robin.*
Cittocincla macrura.	*Shama.*
Merula simillima.	*Nilgiri Blackbird.*
,, nigripileus.	*Black-capped Blackbird.*
Geocichla wardi.	*Pied Ground-Thrush.*
Petrophila cinclorhyncha.	*Blue-headed Rock-Thrush.*
,, cyanus.	*Western Blue Rock-Thrush*
Oreocincla nilgiriensis.	*Nilgiri Thrush.*

FAMILY PLOCEIDÆ.

Uroloncha striata.	*White-backed Munia.*
,, pectoralis.	*Rufous-bellied Munia.*
,, punctulata.	*Spotted Munia.*
Sporæginthus amandava.	*Indian Red Munia.*

FAMILY FRINGILLIDÆ.

Carpodacus erythrinus.	*Common Rose-Finch.*
Gymnorhis flavicollis.	*Yellow-throated Sparrow.*
Emberiza luteola.	*Red-headed Bunting.*

FAMILY HIRUNDINIDÆ.

Chelidon urbica.	*Martin.*
Ptyonoprogne rupestris.	*Crag-Martin.*
,, concolor.	*Dusky Crag-Martin.*
Hirundo rustica.	*Swallow.*
,, javanica.	*Nilgiri House-Swallow.*
,, [illegible]ithii	*Wire-tailed Swallow*

CHAP. I. APPENDIX III.

ORDER PASSERES—*cont.*

FAMILY MOTACILLIDÆ.

Motacilla maderaspatensis.	*Large Pied Wagtail*
,, melanope.	*Gray Wagtail.*
Limonidromus indicus.	*Forest Wagtail.*
Anthus maculatus.	*Indian Tree-Pipit.*
,, nilgiriensis.	*Nilgiri Pipit.*
,, cockburniæ.	*Rufous Rock-Pipit.*

FAMILY ALAUDIDÆ.

Alauda gulgula.	*Indian Sky-Lark.*
Mirafra affinis.	*Madras Bush-Lark.*
Galerita malabarica.	*Malabar Crested Lark.*

FAMILY NECTARINIDÆ.

Arachnechthra asiatica.	*Purple Sun-bird.*
,, minima.	*Small Sun-bird.*
,, zeylonica.	*Purple-rumped Sun bird.*
Arachnothera longirostris.	*Little Spider-hunter.*

FAMILY DICÆIDÆ.

Dicæum concolor.	*Nilgiri Flower-pecker.*

ORDER PICI.

FAMILY PICIDÆ.

Gecinus striolatus.	*Little Scaly-bellied Green Woodpecker.*
,, chlorogaster.	*South Indian Yellow-naped Woodpecker.*
Micropternus gularis.	*Malabar Rufous Woodpecker.*
Tiga shorei.	*Himalayan Golden-backed Three-toed Woodpecker.* (?)
Chrysocolaptes festivus.	*Black-backed Woodpecker.*
,, gutticristatus.	*Tickell's Golden-backed Woodpecker.*
Hemicercus canente.	*Heart-spotted Woodpecker.*
Thriponax hodgsoni.	*Malabar Great Black Woodpecker.*
Picumnus innominatus.	*Speckled Piculet.*

ORDER ZYGODACTYLI.

FAMILY CAPITONIDÆ.

Thereiceryx zeylonicus.	*Common Indian Green Larbet.*
,, viridis.	*Small Green Barbet.*
Xantholæma hæmatocephala.	*Crimson-breasted Barbet or Coppersmith.*
,, malabarica.	*Crimson-throated Barbet.*

ORDER ANISODACTYLI.

FAMILY CORACIADÆ.

Coracias indica.	*Indian Roller.*

FAMILY MEROPIDÆ.

Melittophagus swinhoii.	*Chestnut-headed Bee-eater.*
Nyctiornis athertoni.	*Blue-bearded Bee-eater.*

FAMILY ALCEDINIDÆ.

Alcedo ispida.	*Common Kingfisher.*
Halcyon smyrnensis.	*White-breasted Kingfisher.*

FAMILY BUCEROTIDÆ.

Dichoceros bicornis.	*Great Hornbill.*
Anthracoceros coronatus.	*Malabar Pied Hornbill.*

FAMILY UPUPIDÆ.

Upupa epops.	*European Hoopoe.*
,, indica.	*Indian Hoopoe.*

ORDER MACROCHIRES.

FAMILY CYPSELIDÆ.

Cypselus melba.	*Alpine Swift.*
,, affinis.	*Common Indian Swift.*
Chætura indica.	*Brown-necked Spine-tail.*
,, sylvatica.	*White-rumped Spine-tail.*
Collocalia fuciphaga.	*Indian Edible-nest Swiftlet.*
Macropteryx coronata.	*Indian Crested Swift.*

FAMILY CAPRIMULGIDÆ.

Caprimulgus mahrattensis.	*Sykes's Nightjar.* (?)
,, indicus.	*Jungle Nightjar.*

FAMILY PODARGIDÆ.

Batrachostomus moniliger.	*Ceylonese Frogmouth.*

ORDER TROGONES.

FAMILY TROGONIDÆ.

Harpactes fasciatus.	*Malabar Trogon.*

ORDER COCCYGES.

FAMILY CUCULIDÆ.

Cuculus canorus.	*Cuckoo.*
Hierococcyx sparverioides.	*Large Hawk-Cuckoo.*
,, varius.	*Common Hawk-Cuckoo.*

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ORDER COCCYGES—*cont.*

FAMILY CUCULIDÆ—*cont.*

Cacomantis passerinus.	*Indian Plaintive Cuckoo.*
Penthoceryx sonnerati.	*Banded Bay Cuckoo.*
Chrysococcyx maculatus.	*Emerald Cuckoo.* (?)
Coccystes jacobinus.	*Pied Crested Cuckoo.*
,, coromandus.	*Red-winged Crested Cuckoo.*
Eudynamis honorata.	*Indian Koel.*
Rhopodytes viridirostris.	*Small Green-billed Malkoha.* (?)
Taccocua leschenaulti.	*Sirkeer Cuckoo.*
Centrópus sinensis.	*Common Coucal or Crow-Pheasant.*

ORDER PSITTACI.

FAMILY PSITTACIDÆ.

Palæornis cyanocephalus.	*Western Blossom-headed Paroquet.*
,, columboides.	*Blue-winged Paroquet.*
Loriculis vernalis.	*Indian Loriquet.*

ORDER STRIGES.

FAMILY STRIGIDÆ.

Strix flammea.	*Barn-Owl or Screech-Owl.*
,, candida.	*Grass-Owl.*

FAMILY ASIONIDÆ.

Syrnium indrani.	*Brown Wood-Owl.*
,, ocellatum.	*Mottled Wood-Owl.*
Ketupa zeylonensis.	*Brown Fish-Owl.*
Bubo bengalensis.	*Rock Horned-Owl.*
Huhua nepalensis.	*Forest Eagle-Owl.*
Scops giu.	*Scops-Owl.*
Glaucidium radiatum.	*Jungle Owlet.*
Ninox scutulata.	*Brown Hawk-Owl.*

ORDER ACCIPITRES.

FAMILY VULTURIDÆ.

Gyps indicus.	*Indian Long-billed Vulture.*
Neophron ginginianus.	*Smaller White Scavenger Vulture.*

FAMILY FALCONIDÆ.

Hieraëtus fasciatus.	*Bonelli's Eagle.*
Ictinaëtus malayensis.	*Black Eagle.*
Spizaëtus cirrhatus.	*Crested Hawk-Eagle.*
,, kelaarti.	*Legge's Hawk-Eagle.* (?)
ilornis cheela.	*Crested Serpent-Eagle.*

ORDER ACCIPITRES—*cont.*

FAMILY FALCONIDÆ—*cont.*

Milvus govinda.	*Common Pariah Kite.*
Circus macrurus.	*Pale Harrier.*
,, æruginosus.	*Marsh Harrier.*
Buteo desertorum.	*Common Buzzard.*
Astur palumbarius.	*Goshawk.* (?)
Lophospizias trivirgatus.	*Crested Goshawk.*
Accipiter nisus.	*Sparrow-Hawk.*
,, virgatus.	*Besra Sparrow-Hawk.*
Pernis cristatus.	*Crested Honey-Buzzard.*
Falco peregrinator.	*Sháhin Falcon.*
,, severus.	*Indian Hobby.* (?)
Erythropus amurensis.	*Eastern Red-legged Falcon.*
Tinnunculus alaudarius.	*Kestrel.*
,, cenchris.	*Lesser Kestrel.*

ORDER COLUMBÆ.

FAMILY COLUMBIDÆ.

Osmotreron affinis.	*Grey-fronted Green Pigeon.*
,, pompadora.	*Pompadour Green Pigeon.* (?)
Ducula cuprea.	*Jerdon's Imperial Pigeon.*
Chalcophaps indica.	*Bronze-winged Dove.*
Alsocomus elphinstonii.	*Nilgiri Wood-Pigeon.*
Turtur suratensis.	*Spotted Dove.*

ORDER GALLINÆ.

FAMILY PHASIANIDÆ.

Pavo cristatus.	*Common Peafowl.*
Gallus sonnerati.	*Grey Jungle-Fowl.*
Galloperdix spadicea.	*Red Spur-Fowl.*
,, lunulata.	*Painted Spur-Fowl.*
Perdicula asiatica.	*Jungle Bush-Quail.*
Microperdix erythrorhynchus.	*Painted Bush-Quail.*

ORDER LIMICOLÆ.

FAMILY CHARADRIIDÆ.

Scolopax rusticula.	*Woodcock.*
Gallinago nemoricola.	*Wood-Snipe.*
,, stenura.	*Pintail-Snipe.*

ORDER HERODIONES.

FAMILY ARDEIDÆ.

Dupetor flavicollis.	*Black Bittern.*

ORDER PYGOPODES.

FAMILY PODICIPEDIDÆ.

Podicipes albipennis.	*Indian Little Grebe or Dabchick.*

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APPENDIX IV.

Reptiles.

ORDER SQUAMATA.

SUB-ORDER LACERTILIA.

FAMILY GECKONIDÆ.

Gymnodactylus nebulosus ..	Sispara slopes, near the foot, abundant.
Gonatodes indicus ..	Ootacamund and Kundahs, very common under stones.
„ wynaadensis ..	Walaghát and the Ouchterlony valley.
„ sisparensis ..	Sispara Ghat.
„ littoralis ..	Foot of Western slopes.
Hemidactylus maculatus ..	Slopes, common.
„ triedrus ..	Do.
„ depressus ..	(?)
„ leschenaultii ..	Slopes, common.
Hoplodactylus anamallensis ..	Slopes above Gajalhatti.

FAMILY AGAMIDÆ.

Draco dussumieri ..	Western slopes.
Sitana ponticeriana ..	Eastern slopes and foot.
Salea horsfieldii ..	Ootacamund and all the plateau, very common.
Calotes versicolor ..	All the slopes, very common.
„ mystaceus ..	Eastern slopes. (?)
„ nemoricola ..	Coonoor slopes.
„ ophiomachus ..	All the slopes.
„ ellioti ..	Sispara slopes.
Charasia dorsalis ..	Abundant on the rocks in all the Ghats.
„ blanfordiana	(?)

FAMILY VARANIDÆ.

Varanus bengalensis ..	Southern and Western slopes.

FAMILY LACERTIDÆ.

Cabrita leschenaultii ..	About the foot and lower slopes on Eastern and Southern side.
„ jerdonii ..	(?)
Ophiops jerdonii ..	(?)

ORDER LACERTILIA—*cont.*

FAMILY SCINCIDÆ.

Mabuia bibronii ..	Eastern slopes.
„ carinata ..	Slopes, everywhere.
„ macularia ..	Slopes.
Lygosoma dussumieri ..	Foot of Sispara Ghat and Western slopes.
„ laterimaculatum ..	Do.
„ bilineatum ..	Ootacamund, very common under stones.
„ travancoricum ..	(?)
„ albopunctatum ..	All the slopes.
„ punctatum ..	Do.
„ guentheri ..	Do.
Ristella rurkii ..	Walaghát and Western slopes.

FAMILY CHAMÆLEONTIDÆ.

Chamæleon calcaratus ..	Southern slopes.

SUB-ORDER OPHIDIA.

FAMILY TYPHLOPIDÆ.

Typhlops braminus ..	Common under the stones on the slopes.
„ acutus ..	Rare, about the foot on the Western slopes.

FAMILY BOIDÆ

Python molurus ..	All the slopes up to 4,000 feet, not common.
Gongylophis conicus ..	Common under stones in dry forests up to 3,000 feet.
Eryx johnii ..	Foot of hills, east side

FAMILY UROPELTIDÆ.

Rhinophis sanguineus ..	The Ouchterlony valley.
Silybura ocellata ..	Common at Walaghát and in the Ouchterlony valley.
„ beddomii ..	Walaghát.
„ ellioti ..	Common on the slopes.
„ brevis ..	Kalhatti, Walaghát, Sholur, etc.
Plectrurus perroteti ..	Ootacamund, very common.
„ guentheri ..	Walaghát.
Melanophidium wynaadense ..	Ouchterlony valley, very rare.

FAMILY COLUBRIDÆ.

Xylophis perroteti ..	Ootacamund, very common.
Lycodon striatus ..	Slopes, common.

ORDER OPHIDIA—*cont.*

FAMILY COLUBRIDÆ—*cont.*

Lycodon travencoricus ..	Nilgiris up to 5,900 feet.
,, aulicus ..	Common up to 4,000 feet.
Pseudocyclophis olivaceus ..	Ouchterlony valley, rare.
Polyodontophis subpunctatus ..	Southern slopes.
Ablabes calamaria ..	Slopes.
Oligodon venustus ..	Ootacamund, not rare.
,, affinis ..	Walaghát and Ouchterlony valley
,, brevicauda ..	Do.
,, ellioti ..	Eastern and Southern slopes.
,, subgriseus ..	Do.
Zamenis mucosus (rat snake) ..	Slopes up to 4,000 feet, very common.
,, fasciolatus ..	Below Kotagiri, rather rare.
Coluber helena ..	Western and Eastern slopes.
Dendrophis pictus ..	Slopes, common.
Tropidonotus beddomii ..	Mudumalai and Western slopes.
,, monticola ..	Do.
,, stolatus ..	Slopes, common.
,, piscator ..	Lower slopes.
,, plumbicolor ..	Sholur, Kalhatti and slopes. (?)
Helicops schistosus ..	Mudumalai, very common.
Dipsas trigonata ..	Slopes, very common.
,, ceylonensis ..	Western slopes, common.
,, forstenii ..	Slopes, rare.
Dryophis perroteti ..	Grass land of the plateau, very common.
,, mycterizans ..	Slopes, very common.
,, pulverulentus ..	Walaghát, rare.
Chrysopelea ornata ..	Slopes, common.
Callophis trimaculatus ..	Once met with at the foot of Sispara Ghat, very rare.
,, nigrescens ..	Slopes, rare.
,, bibronii ..	Mudumalai and Western slopes.
Bungarus cæruleus (Krait) ..	Eastern slopes.
Naia tripudians (Cobra) ..	Common low down, rarely coming up to 5,000 foot.
,, bungarus (Hamadryad) ..	Ouchterlony valley and Western slopes.

FAMILY VIPERIDÆ.

Vipera Russellii ..	Lower slopes, eastern side.
Echis carinata ..	Do.

Batrachia.

ORDER ECAUDATA.

FAMILY RANIDÆ.

Rana hexadactyla ..	Eastern slopes.
,, cyanophlyctis ..	Do.
,, kuhlii ..	Walaghát. (?)
,, verrucosa ..	Western slopes.
,, tigrina ..	Eastern slopes
,, limnocharis ..	Plateau, the common frog in all swamps.
,, breviceps ..	Slopes.
,, beddomii ..	Walaghát.
,, diplosticta ..	Do.
,, curtipes ..	Walaghát and the Ouchterlony valley.
,, temporalis ..	Plateau and slopes.
Micrixalus saxicola ..	Western slopes, on rocks, beds of rivers.
,, opisthorhodus ..	Western sides, plateau and slopes.
Nyctibatrachus pygmæus ..	Walaghát.
Rhacophorus malabaricus ..	Western slopes.
,, maculatus ..	Lower slopes.
,, pleurostictus ..	Ootacamund and all the plateau.
Ixalus variabilis ..	Plateau and slopes.
,, glandulosus ..	The tinkling frog of Ootacamund.

FAMILY ENGYSTOMATIDÆ.

Melanobatrachus indicus ..	This little frog, usually only met with on the Anaimalais and Madura Hills, has been found at Walaghát.
Microhyla ornata ..	Walaghát, etc.
Callula obscura ..	Plateau, Western side and slopes.
,, variegata ..	Walaghát.
,, triangularis ..	Paikára.
Cacopus systoma ..	Slopes.

FAMILY BUFONIDÆ.

Bufo hololius ..	Western slopes.
,, beddomii ..	Do.
,, melanostictus ..	Common everywhere.

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APPENDIX V.

Land and Fresh-water Mollusca.

INOPERCULATED LAND SHELLS.

Vitrina auriformis, *Bl.*
,, sp. ?
Helix acalles, *Pf.*
,, acuducta, *Ben.*
,, ampulla, *Ben.*
,, apicata, *Bl.*
,, aspirans, *Bls.*
,, Barrackporensis, *Pf.*
,, bidenticula, *Ben.*
,, bistrialis, *Beck.*
,, cacuminifera, *Ben.*
,, castra, *Ben.*
,, conulus, *Bl.*
,, crinigera, *Ben.*
,, cysis, *Ben.*
,, euomphalos, *Bls.*
,, fallaciosa, *Fer.*
,, fastigiata, *Hutt.*
,, febrilis, *Bls.*
,, guerini, *Pf.*
,, Huttoni, *Pf.*
,, Indica, *Pf.*
,, injussa, *Bl.*
,, Koondaensis, *Bl.*
,, lychnia, *Bl.*
,, Maderaspatana, *Gray.*
,, mucosa, *Bls.*
,, Nilagirica, *Pf.*
,, Pirrieana, *Pf.*
,, retifera, *Pf.*
Helix Shiplayi, *Pf.*
,, sisparica, *Bl.*
,, solata, *Ben.*
,, tertiana, *Bl.*
,, thyreus, *Ben.*
,, todarum, *Bl.*
,, Tranquebarica, *Bl.*
,, tricarinata, *Bls.*
,, vitellina, *Pf.*
Streptaxis Perotteti, *Petit.*
,, Watsoni, *Bls.*
Pupa (Ennea) bicolor, *Hutt.*
Bulimus mavortius, *Reeve.*
,, Nilagiricus, *Pf.*
,, physalis, *Ben.*
,, prætermissus, *Bls.*
,, punctatus, *Ant.*
,, trutta, *Bl.*
Achatina Bensoniana, *Pf.*
,, botellus, *Ben.*
,, Ceylanica, *Pf.*
,, corrosula, *Pf.*
,, facula, *Ben.*
,, Jerdoni, *Ben.*
,, hebes, *Bl.*
,, oreas, *Ben.*
,, paupercula, *Bls.*
,, Perotteti, *Pf.*
,, Shiplayi, *Pf.*

OPERCULATED LAND SHELLS.

Diplommatina Nilgirica, *Bl.*
,, nitidula, *Bl.*
Cataulus recurvatus, *Pf.*
Jerdonia trochlea, *Ben.*
Craspedotropis cuspidatus, *Ben.*
Cyathopoma Coonoorense, *Bl.*
Cyathopoma Deccanense, *Bl.*
,, filocinctum, *Ben.*
,, Malabaricum, *Bls.*
,, malleatum, *Bl.*
,, Wynaadense, *Bl.*

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OPERCULATED LAND SHELLS—*cont.*

Opisthostoma Nilgiricum, *Bls.*
Alycæus expatriatus, *Bl.*
Pterocyclos bilabiatus, *Sow.*
,, nanus, *Ben.*
,, rupestris, *Ben.*
Cyclophorus annulatus, *Tros.*
,, cæloconus, *Ben.*
Cyclophorus deplanatus, *Pf.*
,, Indicus, *Pf.*
,, involvulus, *Müll.*
,, Jerdoni, *Ben.*
,, Nilgiricus, *Ben.*
,, ravidus, *Ben.*
,, Shiplayi, *Pf.*

FRESH WATER SHELLS.

Ampullaria globosa, *Swain.*
Neritina Perotetiana, *Récl.*
Paludina Bengalensis, *Lam.*
Bythinia stenothyroides, *Dohrn.*
Planorbis exustus, *Desh.*

CHAPTER II.

POLITICAL HISTORY.

EARLY HISTORY—Under the Ganga kings—The Kadambas—The Hoysalas—Their Dannáyakas—And the kings of Mysore—Dearth of historical material—The antiquities of the hills—Cairns and barrows—Their contents—Their builders—*Ázárams*—Kistvaens—Cromlechs—Their builders—The best specimens—Historical inferences from these antiquities. ENGLISH PERIOD—Affairs at the end of the 18th century—The fall of Seringapatam and cession of the district, 1799—Later history of the Wynaad—The Pychy rebel—His death in 1805—The plateau; first European visitors—Portuguese priests, 1602—Dr. Buchanan, 1800—Keys and MacMahon, 1812—Whish and Kindersley, 1818—John Sullivan, 1819—The first bridle-path to the plateau, 1821—Reports regarding its climate discredited—First mention of Ootacamund, 1821—It becomes the capital of the plateau, 1822—Progress up to then—Improvements between 1823 and 1825—Sir Thomas Munro's visit, 1826—Government assistance to Ootacamund, 1827—Progress up to then—Mr. S. R. Lushington becomes Governor—His support of the sanitarium—His visit to the hills, 1829—Part of the plateau transferred to Malabar, 1830—New roads to it—Other improvements—Progress up to 1833—The Convalescent Dépôt abolished by Sir F. Adam, 1834—Other changes by his Government—The plateau re-annexed to Coimbatore, 1843—The Kundahs, etc., added to it, 1860—It is placed under a Commissioner, 1868—The Ouchterlony Valley and the Wynaad added to it—It becomes a Collectorate, 1882.

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THE Nilgiri district may almost be said to be one of those happy countries which have no history. Even had it been sufficiently rich or strategically important to tempt an invader, its inhospitable climate, the difficulties of the passes up to it and the feverish jungle which hedged it round would have deterred any but the boldest. But it never contained any towns worth sacking or forts worth capture; and the only inhabitants were poor graziers and cultivators. Consequently the rapacious rulers round about almost disregarded it; and the only parts of it which figure prominently in their chronicles are the passes (like Gajalhatti on the north-east) which enabled them to circumvent it and get at their foes on the other side without actually crossing it.

For this and other reasons, the materials for an account of its people in the days preceding the British occupation are very meagre. In most other parts of the Presidency the inscriptions on the stone walls of the numerous temples afford valuable clues to the events of byegone centuries; but on the Nilgiri plateau the shrines are either temporary or entirely modern, while in the Wynaad they are seldom more than thatched huts; and apparently

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there is not one ancient inscription of any historical value in the whole of the district. The neighbouring Mysore territory is however less destitute of records; and the contents of these have been set out in Mr. Lewis Rice's *Epigraphia Carnatica* and throw a dim reflected light on the state of affairs in the Nilgiris in early days.

Under the Ganga kings.

The oldest inscription which mentions the district belongs in Mr. Rice's opinion to about 930 A.D. and shows that the Wynaad was then part of the territories of the well-known Ganga dynasty of Mysore. This record relates how on the death of Ereyappa, the then king of the Gangas, his sons Ráchamalla and Bútuga both claimed to succeed to the throne. Ráchamalla was in 'Bayalnád' ('the land of swamps,' the old name for the Wynaad)[1] at the time, and Bútuga sent to him and proposed that they should settle their differences by dividing the country between them. But Ráchamalla's envoys curtly replied that they 'did not wish any other than Ráchamalla to rule over the kingdom of Bayalnád.' Hostilities between the brothers naturally followed; Ráchamalla was killed; and Bútuga became undisputed ruler of the Wynaad.

The Kadambas.

Between the close of the tenth century A.D. and the beginning of the twelfth century these Gangas were ousted from the Wynaad by a branch of the Kadambas, the dynasty which at one time had its capital at Banavási in North Canara. The Wynaad was at that time divided into two portions, the Bíra Bayalnád and the Chági Bayalnád (the limits and meaning of which are not clear) and one of the Mysore inscriptions (alluding perhaps to the treacherous beauty of the country, which attracted the stranger and then laid him low with malaria) says 'an adulteress with black waving curls, an adulteress with full-moon face, an adulteress with endless side-glances, an adulteress with adorned slim figure was this storeyed mansion, the double Bayalnád.' Cattle-lifting seems to have been very prevalent, and sometimes the fights which it occasioned almost rose to the dignity of wars.

The Hoysalas.

Meanwhile the Hoysalas, whose capital was at Dvárasamudra, the modern Halébíd in Mysore State, were rising into power; and their king Vishnuvardhana, who ruled from 1104 to 1141, is related to have captured the Wynaad 'with a frown.' He also seized the Nilgiri plateau; for his general Punisa is said in a record of 1117 A.D. to have 'frightened the Tóda, driven the Kongas underground, slaughtered the Póluvas, put to death the Maleyálas, terrified king Kála, and entering into Níla mountain offered up its

[1] Many of these swamps, which are still known in the vernacular as *bayals* or *vayals*, are now cultivated with paddy.

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peak to the Lakshmi of Victory.' This is the first mention hitherto discovered of the names Tóda and Nílagiri. The Sanskrit forms of the latter, Níládri and Níláchala, also occur in other inscriptions of about the same date. A grant of 1120 A.D. says that Vishnuvardhana 'turned the Níla mountain into a city' and another of 1141 states that 'the ruler of Nirugundanád, by order of Édenád and Hiriyanád, laid siege to Kúkulla fort, above the peak of Nílagiri fort, burnt the fort, slew the son of Kóteya Náyaka (or, perhaps, 'of the chief of the fort'), and joining fight with the enemy's force who opposed him, routed them and, by his bravery in war becoming a hero, went to Heaven.' It is not easy to identify these places and no signs of any Kúkulla fort which would answer this description survive; but it is worth mention that the natives sometimes call Rangasvámi Peak, on the extreme east of the plateau, the Nilgiri Peak; that a village called Nirgundi stands seven miles east by south of Kótagiri; and that another named Kúkal is four miles north-west of it. It is in any case deserving of note that the conquest of the Nilgiri plateau was considered to merit special record and that the country possessed, even then, inhabitants who were capable of considerable resistance. The title 'Subduer of the Nílagiri' (Nílagiri-sádáran) seems indeed to have been borne hereditarily for long afterwards by the Hoysalas and their successors. Perhaps one reason why they gloried in it was that the Nilgiris were holy hills. The Abbé Dubois says that even a sight of their summits was held to be sufficient to remove sin.

Their Dannáyakas.

In 1310 this Hoysala line was overthrown by the Musalmans of Delhi; and their king fled. Authority over the Nilgiris seems then to have descended to Mádhava Dannáyaka, the son of the Hoysala minister Perumála Déva Dannáyaka, who took the title of 'Subduer of the Nilgiris' and ruled from Terakanámbi in the present Gundlupet taluk, just north of the plateau, until 1318. He was followed by his son, and an inscription of the latter's time in the Vishnu temple at Dannáyakankóttai, the deserted village near the junction of the Moyár and Bhaváni, calls that place Nílagiri-sádáran-kóttai, or 'the fort of the Subduer of the Nilgiris.' Its present name of Dannáyakankóttai was doubtless given it in honour of this family of Dannáyakas. Perhaps this village was the 'city' above referred to as having been built by Vishnuvardhana. It is now entirely uninhabited and is unapproachable from the tangle of prickly-pear which grows all over and around it; but tradition among the hill-tribes, as well as history, points to it as one of the places from which, even up to the

end of the 18th century, the hills were ruled; and even after the British occupied the country it was at one time the head-quarters of a tahsildar.

Both the Wynaad and the plateau fell, in the early part of the sixteenth century, under the rule of the famous Hindu kings of Vijayanagar, who had repulsed the Delhi Musalmans and established their capital at Hampe in the present Bellary district. An inscription of 1527 records that Krishna Ráya Náyaka, 'the right hand of Krishna Déva Mahárája' (the greatest of the Vijayanagar line) granted to a certain person 'the village of Masanahalli in Báyanád stala, together with its hamlet of Déva-ráyapura, free of all imposts, with the eight rights of full possession, to be enjoyed by himself, his sons, grandsons and descendants, as long as sun and moon endure.' This Masanahalli is the village at the foot of the Sígúr ghát which is now called Masinigudi; and its hamlet Dévaráyapura is the Dévaráyapatna from which the early European visitors to the hills named the path which led down to Sígúr 'the Dévaráyapatnam pass.' Round about both places (see p. 351) are numerous ruined buildings and sculptured cromlechs, and both were clearly of far greater importance then than now. It is worthy of note, too, that they were considered at that time to be included in the Wynaad. One inscription seems indeed to suggest that the former was actually the capital of that tract.

And the kings of Mysore.

In 1565 the Vijayanagar dynasty was overthrown by the united Musalman kings of the Deccan at the memorable battle of Talikóta (one of the great landmarks in South Indian history) and its rulers, though they continued to maintain a semblance of power, became so feeble that their vassals in every direction rose against them and declared themselves independent. In 1610 one of these, king Rája Wodeyar (Udaiyar) of Mysore, drove out of Seringapatam the Vijayanagar general; and two years later he was granted that place and the Ummattúr country near it by the then nominal king of Vijayanagar, who was living at Penukonda in the Anantapur district. Thenceforth the kings of Mysore became rulers of the Wynaad and titular possessors of the Nilgiri hills, and the latter were apparently under the immediate rule of dependents of theirs called the Udaiyars or Rájas of Ummattúr (a village in the present Chámarájnagar taluk) who constantly figure in local tradition.

Dearth of historical material.

Of the doings of the Mysore kings in the Wynaad and on the plateau or of the internal history of the district down to the date of the English occupation in 1799 no record or definite tradition

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now survives. The account (referred to later) by the Jesuit priest Ferreira or Finicio of his visit to the plateau in 1602 shows that the Tódas and Badagas were already settled there at that time and maintained much the same mutual relations as they do to-day. The only relics of a possibly earlier occupation by others are, on the plateau, the old gold-workings referred to in the last chapter, sundry derelict forts, and numerous cairns, barrows and cromlechs; and, in the Wynaad, some more ancient gold-workings and one or two old forts, such as the two near Nellakóttai mentioned on p. 370 below.

Regarding none of these three classes of relics is there any real history or even any definite tradition; and who their authors can have been is a matter about which it is possible only to conjecture. The gold-workings are often attributed to Tipu Sultan's initiative; but there is no evidence that he had anything to do with them and the probabilities and the legends (see for example p. 366) point to their being much older. Such Badaga tradition as exists usually declares (see Chapter XV) that the Hulikal Drug, Malaikóta and Udaiya Ráya Kóta forts were constructed by the Ummattúr Rájas when they held the country as dependents of Mysore about the beginning of the sixteenth century; but is entirely silent regarding the mud fort at Kinnakorai which commands a track leading up from the Bhaváni valley and the Sembánattam fort near Masinigudi. The cairns and barrows of the plateau are apparently older than any of these strongholds; while the cromlechs on the other hand seem comparatively modern. But the evidence is too scanty to warrant positive assertion and the net result of enquiries into these three classes of antiquities is of the very slightest value from the strictly historical point of view.

The antiquities of the hills.

Setting aside the gold-workings and the ruined forts, which tell us the least of the three classes, we may digress for a moment to see what evidence the old cairns, barrows, etc. of the plateau afford as to the dwellers in that tract either before or after the Mysore kings became rulers of it.

These consist of (*a*) cairns, which range from carefully constructed circular walls of uncemented stone rising above the ground and sometimes called 'draw-well cairns,' through rougher similar walls backed with earth, down to mere circles of stones embedded in the ground; (*b*) barrows, which consist of circular heaps of earth surrounded by a ditch which is sometimes enclosed in one or more circles of loose single stones; (*c*) funeral circles, or *ázárams*, built of rough stones; (*d*) kistvaens, or box-shaped

constructions made of six slabs of stone (in one of which is a round aperture about a foot in diameter) sunk down to the level of the ground and sometimes surrounded with a circle of loose stones or an earthen tumulus; and (*e*) cromlechs (or dolmens), which are similar constructions but have one side quite open, stand above the level of the ground, and are often sculptured with figures of men and animals.

Except the cromlechs, these monuments originally contained ancient relics, such as pottery, weapons, implements, beads, etc., and unluckily this fact at once attracted to them the attention of the early European visitors to the hills, who dug into large numbers of them without system or care and without troubling to record the results. As early as 1826, the Rev. James Hough said [1] that some of them had been opened; Captain Harkness' book on the Tódas, published in 1832,[2] gave an account of his excavations into others with an illustration of his finds; and Lieutenant Burton, who wrote in 1847,[3] put 'curiosity-hunting,' as he called it, first in his list of the amusements open to a visitor to Ootacamund. Even as early as that, he said, these antiquities had been 'so exposed to the pickaxes of indefatigable archæologists that their huge store of curiosities has been almost exhausted. Little remains but the fixtures.' Captain H. Congreve was the first to publish (in 1847 [4]) an illustrated account of the excavations he had made (he opened 46 cairns) and the relics he had found; but the classic on the subject is the *Primitive Tribes and Monuments of the Nilagiris* of Mr. J. W. Breeks, the first Commissioner of the district, which contains numerous photographs.[5] The cream of Mr. Breeks' finds was eventually deposited in the Madras Museum, and Mr. Bruce Foote's *Catalogue of the Prehistoric Antiquities* there (Government Press, 1901) contains further illustrations of some of them.

Mr. Breeks' work was written in compliance with a circular issued by the Indian Museum at Calcutta suggesting that representative collections should be made, for exhibition at that institution, of the contents of the many ancient burial-places in Central, Western and Southern India. This was sent by the Madras Government of the day to all Collectors, but Mr. Breeks appears to have been the only one of them who achieved anything of note in the direction desired.

1 *Letters on the climate, etc. of the Neilgherries* (London, 1829), 82.

2 Smith, Elder and Co., pages 33–5.

3 *Goa and the Blue Mountains* (London, 1851), 313.

4 M. J. L. S., xiv, 77–146.

5 Allen and Co., 1873. Other papers are the articles of Mr. M. J. Walhouse, M.C.S., in the *Indian Antiquary*, ii, 275; iv, 161; and v, 41.

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Cairns and barrows.

Of the various classes of monuments above referred to, the cairns (called by the Badagas *hokkallu*, or navel-stones) and barrows are by far the most numerous. They always stand on the top of some commanding hill and sometimes occur in groups. They are scarcest on the Kundahs, where only a few small ones exist in the neighbourhood of Avalanche, and most numerous, and also most prolific in relics, in the Tódanád. Within the stone enclosures of the cairns, which range from ten to twenty-eight feet in diameter, and in the barrows, which are from twenty to sixty feet in extreme width, are generally found large oblong stone slabs, lying on the ground and usually placed south-west and north-east as though by compass.

Their contents.

These cairns and barrows were clearly burial-places and appear to belong to the same period. The things found within them included burnt bones and ashes, pottery, iron weapons and domestic implements, a few bronze vessels, one or two bronze and copper weapons, a few gold ornaments, and beads of glass, agate and cornelian.

The commonest find was pottery. It is usually made of coarse clay, like the chatti of to-day, but sometimes is finer and finished with a polish made from mica. Some of the forms are unique and quite unlike anything found in other parts of South India. The real cinerary urns which contained the ashes and bones of the dead are shaped like a flattened chatti and rudely ornamented with vandykes, dots and circles. They were usually buried four or five feet deep. Nearer the surface were much more striking examples of pottery, namely long cylindrical jars, generally empty, with round or conical bases fashioned to rest upon ring-stands or to be stuck into soft soil, like the classical amphoræ. They have domed lids on which are grotesquely and clumsily executed figures of the most varied kind, including men and women standing or riding on horses, leopards, buffaloes with great curved horns, peacocks, deer with spreading antlers, sheep, elephants, and other animals too rudely-fashioned to be identifiable with certainty. Some of the buffaloes and sheep have bells round their necks. The men wear beards clipped short; both men and women have head-dresses, some of which resemble the Phrygian cap; the only clothes they wear to protect them from the rigours of the plateau are narrow waist-cloths, but they have necklaces, bracelets and other ornaments, and cross-belts in front and behind. Nothing could be more unlike the dress of the present dwellers on the hills.

The weapons (none of the hill people now use any weapons at all) include short-handled axes, heads of spears, javelins and arrows, swords and daggers; and the domestic implements

comprise sickles, razors, knives, shears with spring handles, tweezers, lamps and bells. The few bronze vessels, which are naturally much better preserved than any of the iron articles, are so elegant in shape and so delicately ornamented with flutings and lotus-patterns that they almost resemble Greek or Egyptian art and stand quite apart from the other finds. The gold ornaments are also prettily designed, and the beads are cleanly drilled and sometimes engraved with varied patterns filled in with a kind of white enamel. Many of these articles again differ entirely from anything now in use on the plateau.

Their builders.

Regarding the age and the authors of these cairns and barrows there has been much ingenious speculation. In many parts of the world, a distinct bronze age preceded the iron age, but there is as yet no evidence that this was so in Southern India and the fact that bronze and iron articles occur side by side in these monuments raises no clear inference as to their date. Ancient trees (computed to be 300 or 400 years old and one of which, mentioned by Congreve, was 27 feet in circumference) grow out of the middle of some of them; but the nature of the relics does not point to a really remote antiquity, and none of the hill-tribes claim any right in the monuments or (though this fact can doubtless be explained away) exhibit any objections to their being opened and rifled. There is nothing about the monuments to connect them with any of these tribes (unless it be the numerous figures of buffaloes, which resemble those which the Tódas now breed) but on the other hand their contents, as has been seen, rather point to their having been the work of people who differed altogether from the present inhabitants and have disappeared. Captain B. S. Ward, whose survey memoir of 1822 appears to be the earliest paper in which the monuments are referred to, and who was a most careful enquirer, said that the people told him that they 'were built by the Boopalans, predecessors of the present race of the Toduwars' or Tódas. Breeks, on a consideration of all the evidence, thought it 'more satisfactory to assign the cairns to the Tódas than to an unknown race;' but if the pottery found in them was really the work of the ancestors of the present Tódas these latter must have greatly degenerated in æsthetic appreciation, for nowadays their domestic utensils, which are mostly made for them by the Kótas, are of the plainest description. Perhaps, however, just as they may have given up the use of weapons when they found defence was no longer called for, they gave up yearnings after the beautiful when they found another caste would fashion sufficiently serviceable, if ugly, utensils for them.

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A number of cairns and barrows not referred to either by Breeks or Congreve still exist on the hills and some of these have apparently never yet been excavated.[1] The subject cannot therefore be said to have been exhausted; but as far as it has hitherto been worked out it throws no clear light on the history of the plateau

Ázárams.

The *ázárams*, or stone funeral circles, are in some cases with difficulty distinguishable from the ruder cairns and closely resemble the circles within which, even to this day, see p. 145, the Tódas deposit relics at their funerals. Within these, large deposits of charcoal and bones, some brass bracelets, and some iron spear-heads and chisels were found by Breeks. These last were very much less rusted than those discovered in the cairns and barrows, and of rather different shapes. No brass was found in any of the cairns, though the Tóda women of to-day wear brass armlets. It seems permissible to suppose that the Tódas may have been the authors of this class of monument. Breeks explored but few of them, and mentions a group of about thirty on the hill just east of the top of the Sígúr ghát which he considered should be carefully examined.

Kistvaens.

The kistvaens, which are all much alike, have only been found in one locality on the plateau, namely near the ruined Udaiya Ráya fort already referred to. They do not seem to have any connection with this construction, for the Badagas have no tradition regarding them and give them the unmeaning name of *Móriáru manai* or 'Móriárs' houses.' They generally measure about 2½ feet by 3½ feet and the circle of stones around them is ordinarily about 18 feet in diameter. They differ but little from the thousands of similar erections which are scattered about other parts of the Presidency. Like the cairns, barrows and *ázárams*, they were doubtless burial-places. Inside the stone circle of one opened by Mr. Breeks was found a broken dagger and some fragments of pottery of a thick, highly glazed kind, quite unlike that from the cairns.

In the Moyár valley are hundreds more of them, sometimes in groups covering ten or twelve acres, and these are generally surrounded with earthen tumuli.[2]

[1] Many were noticed during the local inquiries made for the collection of material for this present volume, but it seems useless to give particulars of these since not only is it most difficult to describe their position accurately enough to enable them to be traced hereafter, but it is impossible to be sure from their appearance whether they have been already rifled or not. One or two however are mentioned in Chapter XV.

[2] Mr. William Fraser's paper in M.J.L.S. for May 1860.

Cromlecl

The cromlechs (called *sila-kallu*, or 'sculptured stones,' by the Badagas and *bira-kallu*, or 'hero-stones,' by the Kurumbas and Irulas) stand in a class apart, and appear to have no connection with any of the other monuments. While the cairns are scattered over the plateau and generally stand on high, bare ridges, the cromlechs all lie on the lower levels and near the passes leading up from the low country. They are apparently not burial-places, and the few objects found in them are quite different from the contents of the cairns and almost certainly more modern. The cromlechs consist, as has been said, of three slabs of stone placed on end to form three sides of a square, with a capstone on top. The biggest of them, one in Jakkanéri, a hamlet of Kótagiri, is just high enough for a man to stand upright in it. The inner sides of the back slabs are frequently roughly sculptured, and the representations on them furnish material for conjectures as to the age and purpose of the monuments and the people who erected them.

The sculptures, of which there are many photographs in Breeks' book, very generally consist of a series of compartments or rows, one above the other. In the topmost, beneath representations of the sun and moon denoting that the testimony of the stone will last for ever, are often a basava (sacred bull of Siva) kneeling before a lingam on its yóni pedestal, and a male figure; while in the lower ones are standing male and female figures and representations of battle or hunting scenes—such as a man, surrounded by his attendants, riding on a horse and brandishing some weapon, or on foot spearing a sambhar, tiger or elephant. Both the men and women are nude above the waist, and the latter wear big ornaments in their pendant earlobes and their hair dressed in a great bunch on one side of their heads. In some cases the women are depicted with one hand raised and clasping a flower or a round object.

Their builders.

It will thus be seen that these sculptures closely resemble those on the *vírakals* ('hero-stones') and *mahá sati kals* ('great sati stones') which are so common in Coorg, Mysore and the western side of the Bellary district, and which are also numerous round about Masinigudi. These usually consist, it is true, only of a single upright slab, while the cromlechs contain in addition two side slabs and a capstone; but the sculptures on both classes of monument are remarkably similar in general design and in the curious head-dresses of the women.[1] Colonel Wilks [2] thought

[1] See Fergusson's *Rude Stone Monuments* (1872), 483.

[2] *History of Mysore* (Madras, 1869), i, 15 note.

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that the lower compartments were intended to depict the hunting expedition or battle in which some hero was slain, the figures of women above them to represent his translation to Heaven by celestial nymphs and the uppermost compartment to portray the regions of bliss themselves, with the hero standing before the peculiar emblems of his religion, the Lingáyat (or, at the least, the Saivite) faith. The women with one hand raised are the dead hero's wives who committed sati on his pyre, and the objects they hold are one of the flowers or limes which they used to distribute to the bystanders before they took the fatal leap into the fire.

Now the only tribe on the hills who are Saivites or Lingáyats (or even Hindus in the strict meaning of the word) and would be likely to carve basavas and lingams on their memorials of the dead are the Badagas; and these people to this day claim connection with some of these sculptures. They say, for example, that those at Túdúr and Mélúr were made by the ancestors of the present villagers of Athikárihatti (p. 316); they often put the supposed abodes of their deified ancestors near such cromlechs; and they are repairing and improving one at Acheni. It has been urged that the Badagas cannot have erected them because they do not understand the art of stone-cutting; but this art has never been common property and has always been the exclusive possession of the artisan castes. The Badagas have apparently always imported necessaries of life (such as their clothes) from the plains below them, and there seems to be no reason why they should not have brought up stone-masons when need arose, as indeed they do nowadays. They by no means severed their connection with the plains, and to this day some of them choose their brides from their caste-fellows down there.

Only one of the cromlechs, that at Mélúr, has any inscription on it and this is too fragmentary and defaced to be clear. Rai Bahádur V. Venkayya, the Government Epigraphist, says that he cannot find in it the Saka year or the reference to a tiger mentioned in Dr. Pope's translation of it given on p. 102 of Breeks' book, and that apparently its purport is a statement that the cromlech was set up by two Gavundans. The characters are quite modern. Badagas of position still use the title Gavundan, and as far as it goes the inscription thus supports the theory that the cromlech was put up in historically recent times by Badagas.

The best specimens

The best examples of these sculptured cromlechs on the plateau are those half a mile west of Shólúr (six miles in a straight line north by west of Ootacamund); in a shóla about a mile south of the Mélúr already mentioned, which include the

best carving of all; in the Banagudi shóla of Jakkanéri, a hamlet of Kótagiri, near the bridle-path from Kótagiri to St. Catherine's falls, which contain the biggest example known [1] and are called by Breeks the 'Doddúru group;' at Jakkata (the 'Jakata Kambe' of Breeks) about a mile to the south of the last; at Acheni, a hamlet of Kónakarai three miles south-east of Kótagiri; at Halúru (the 'H'laiuru' of Breeks) a hamlet of Kengarai east of Kótagiri; and at Túdúr, a deserted Badaga village about two miles west of Kulakambai, which are those referred to by Breeks as 'in Major Sweet's plantation beyond Kátéri.'

In these last were found a number of iron and bronze armlets, sickles, rings, two small iron hatchet heads (all less rusted than in the cairns) and a rough chatti; but as a rule there is nothing in the cromlechs, whether sculptured or unsculptured, except rounded water-worn stones, which the natives call *déva-kotta-kallu*, or 'god-given stones.' Breeks says that the Kurumbas used to put one of these stones in a cromlech each time one of their relations died and Mr. M. J. Walhouse, M.C.S., says [2] the Irulas did so too.

In the McDougal estate near the Kulakambai falls, down a very steep path and in a spot overlooking the Bhaváni valley, are the ruins of a remarkable sculptured example which was described and illustrated by Mr. Walhouse before it was demolished and is the only one of its kind on the hills. It originally consisted of five cromlechs (three big ones in the middle and a smaller one at each end) standing side by side and facing the same way, but the slabs of which it was composed have now been thrown down and are covered with jungle.

Neither Breeks' nor Congreve's accounts of the cromlechs are exhaustive, there being several excellent sculptured examples which are referred to by neither, but they go far enough to show that there is little hope that any more definite conclusions will result from further enquiry.

Historical inferences from these antiquities.

It will be seen from this long digression that, however interesting the various antiquities on the plateau may be in themselves, they throw almost no light on its actual history. In the Wynaad there are no remains of the kind, and the darkness there is even deeper.

Almost nothing is heard of the fate of either tract from the time that they fell, as already related, under the power of the

[1] This is evidently the one referred to on p. 40 of Colonel Ross-King's *Aboriginal Tribes of the Nilgiri Hills* (Longmans, Green, 1870).

[2] *Indian Antiquary*, ii, 275–8.

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Mysore kings in 1612 until the end of the eighteenth century—just before the English first became possessed of them.

Affairs at the end of the 18th century.

The very existence of the East India Company was at that time threatened by the kingdom of Mysore, which had meanwhile (by steps with which the present account is not concerned) risen to great power under Haidar Ali, a soldier of fortune who had usurped its throne in 1760, and his son Tipu Sultan, who succeeded on his death in 1782. The latter appears to have levied revenue from the plateau and garrisoned the forts at Malaikóta and Hulikal Drug (see the accounts of them in Chapter XV) with detachments from the Dannáyakankóttai already mentioned.

The fall of Seringapatam and cession of the district, 1799.

The Mysore Wars so well known in history were waged by the East India Company against Haidar Ali and his son Tipu in the endeavour to cripple their power; and the Third Mysore War ended at length in victory, Seringapatam being captured in 1799 and Tipu killed during the final assault. In the treaty which followed (settling the division, between the Company and its allies, of Tipu's territories) the Nilgiri plateau, which was included in the 'Danaigincotah' district (revenue 35,000 Kantiráya pagodas) mentioned in the schedule thereto,[1] was ceded to the Company; but the Wynaad, by some blunder, was ceded under one name to the Company and under another to the young king of Mysore whom the British had resolved to re-establish on the throne which had been seized from his family by Haidar Ali. The error was rectified by a supplementary treaty dated 29th December 1803 [2] in which the country (the revenue of which was put at 10,000 Kantiráya pagodas) was formally handed over to the Company, who had in the interim been exercising all rights of sovereignty within it.

Later history of the Wynaad.

Stormy years followed in the Wynaad.[3] One of the most important families in Malabar, of which the Wynaad then formed part, were the Kottayam or Kotiote Rájas, whose territory included the whole of the Wynaad and much of the Kottayam taluk. This territory had long been governed jointly by different members of the family, each of them ruling over a particular division. The head of the family was Víra Varma, commonly known as the Kurumbranád Rája, but its most celebrated member was Kérala Varma Rája, who belonged to its Padinyára Kóvilagam or 'western branch' located in the Palassi or 'Pychy' amsam of the

[1] See Aitchison's *Treaties, etc.* (1892), viii. 318.

[2] *Ibid.*, 474.

[3] The account which follows is abridged from Logan's *Malabar*.

Kottayam taluk, and who soon became notorious under the name of 'the Pychy rebel.'

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The Pychy rebel.

He had already been engaged in disputes with Tipu. In 1787 that monarch had compelled the head of the Kottayam family to hand over to him the Wynaad, which was part of the particular division of the Kottayam territory which had belonged to its 'western branch.' Kérala Varma was the leading member of that branch; declined tamely to submit to this alienation of its property; and from 1787 to 1790 (when the Second Mysore War between the Company and Tipu began) kept up a desultory warfare with Tipu's troops.

On the opening of hostilities in 1790, the Company's Chief at Tellicherry promised Kérala Varma that if he would 'enter heartily into the war against Tipu Sultan and act rigorously against him' the Company would do everything in their power to render him independent of Tipu.[1] The war ended in 1792 and Tipu was compelled to cede certain territory to the Company.[2] Malabar (including the Wynaad) was held by the Company to be comprised in the country then transferred and was placed under the charge of the Government of Bombay. One of the first acts of that Government was to restore Kérala Varma; but he persistently refused to come to any agreement about the revenue settlement of his country and moreover got into trouble with the authorities in 1795 by impaling certain Máppillas alive. An attempt to capture him resulted in his fleeing to the Wynaad, but on his begging forgiveness and the Kurumbranád Rája giving a security bond for his good behaviour he was allowed to return. He however began intriguing with Tipu's officers and preventing the collection of the pepper revenue, and at the end of 1796 a proclamation was issued against him and a letter sent to him warning him that 'not a sepoy shall rest in this province till you and all your adherents are utterly extirpated.'

Fighting followed in the beginning of 1797 in which Kérala Varma had much the best of it, surprising a detachment and killing its officer; cutting up a havildar's guard at Palassi and all their women and children; and compelling some of the posts to withdraw and others to put themselves in a state of siege. He also now obtained support and ammunition from Tipu (who had always declared that the Wynaad had never been ceded to the Company and was still his territory) and during jungle-fighting in March 1797 inflicted a loss of about half its numbers on one

[1] Logan's *Malabar*, iii, 84.
[2] Aitchison's *Treaties, etc.*, viii, 462.

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detachment of two companies sent against him and killed four English officers belonging to another, of which he captured the guns, baggage and ammunition. The Governor and the Commander-in-Chief of Bombay eventually came down to Malabar and troops were pushed up and captured Kérala Varma's headquarters. Negotiations were then opened with him and eventually in 1797 he was pardoned and granted a pension of Rs. 8,000 per annum.

In 1798 Lord Mornington declared by proclamation that the Wynaad had not really been ceded to the Company by the treaty of 1792. In 1799 however, as has been seen, it was so ceded by the treaty of Seringapatam, and from the 1st June 1800 it was placed under the Government of Madras.

But Kérala Varma declared that the Wynaad had always belonged to his family and that its cession in 1799 was *ultra vires*; and he once more went out on the war-path. The Government of India ordered that his presumptuous conduct should be severely punished and placed the military control of the district, with Canara and Mysore, under Colonel Arthur Wellesley, afterwards Duke of Wellington. That officer's hands were full elsewhere for some time, and Kérala Varma made the most of his opportunities by attacking the low country of Malabar. At the end of 1800, however, Colonel Wellesley was free to deal with him and began regular operations to that end. By May 1801 every post both above and below the gháts was held by British troops and Kérala Varma was a wanderer in the jungles. It was found impossible actually to capture him, however, and meanwhile the unwise administration of the first Collector of Malabar, Major Macleod, had thrown the whole district into a ferment and enormously increased the number of the malcontents.

These insurgents quickly became so bold that they even threatened the Tódanád and the country round Masinigudi, then called 'the Dévaráyapatnam hobli.' The Board of Revenue reported in June 1803 that the latter had been deserted in consequence, and in 1804 Government sanctioned the entertainment of 100 peons to protect it. In June 1805 Colonel Macleod, the officer commanding a portion of the Madras force recently brought into Malabar, offered rewards for the seizure of Kérala Varma and eleven of his followers and declared all their property confiscated. This proclamation was the basis of the enquiry which was held in 1884 into the 'Pychy escheats' in the Wynaad and is referred to on p. 280 below.

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His death in 1805.

Meanwhile every effort to capture Kérala Varma continued to be made by the authorities and he was at length killed, resisting to the last, in November 1805. Thus ended the days of a man who, as the Collector wrote, 'for a series of years has kept this province in a state of confusion, and agitated it with the most intricate and perplexing warfare in which the best of officers and of troops have at various times been engaged to the melancholy loss of many valuable lives and the expenditure of as many lakhs of rupees.' With his death ends the political history of the Wynaad.

The plateau; first European visitors.

We may now turn to events on the Nilgiri plateau. This, though it came into the possession of the Company in 1799, was apparently not visited by any Englishman until 1812 and certainly contained no European residence until 1819.

Portuguese priests, 1602.

Nearly two centuries before the Company obtained it, two Portuguese had made flying visits to it from Malabar; but their impressions were not such as to encourage others to follow their example. The record of these visits is contained in two Portuguese MSS. in the British Museum which are quoted in part in Breeks' *Primitive Tribes and Monuments* and translated in full in Mr. W. H. R. Rivers' recent work *The Tódas*.[1]

About 1602 the first Roman Catholic Bishop of the Syrian Christians of the Malabar coast despatched a priest and a deacon to the Nilgiris to search for and bring back into the fold certain Christians who were stated to be living on the hills and to have 'anciently belonged to the Syrian Church of Malabar, but then had nothing of Christianity except the bare name.' The account brought back by them 'was not so sure and complete as was desirable,' so soon afterwards a somewhat less hasty expedition, led by the Jesuit priest Jacome Ferreira,[2] was at the Bishop's request despatched from Calicut. Ferreira's formal report, written at Calicut on his return on the 1st April 1603, stated that he had found no tidings of any Christian colony, but contained some account of the Badagas and Tódas and showed that he apparently came up by the jungle-path which still runs from Manárghát in the Malabar district down the upper part of the Bhaváni valley, to Súndapatti in that valley, and thence up the ravine of the Kundah river to Manjakambai, two miles south-east of Dévashóla hill. He and his party returned by a better route, shown them by the kindly Badagas, of which no account is given but which may have been the Sispára path.

[1] Macmillan & Co., 1906, pp. 719 ff.

[2] Mr. Rivers gives his name as Finicio or Fenicio.

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The colony of backsliding Christians being shown to be a myth,[1] the Catholics of Malabar apparently took no further interest in the Nilgiris, and for close on two centuries more these hills continued an unknown land.

Dr. Buchanan, 1800.

On the 25th October 1800, Dr. Francis Buchanan, who had been deputed by the authorities to conduct enquiries into the extensive territories added to the Company's possessions by the treaty of 1799 already mentioned, and who had arrived at the village of Dannáyakankóttai which is referred to above and was then the head-quarters of the taluk which included the Nilgiris, 'took a very long and fatiguing walk to the top of the western hills in order to see a *cambay*, or village inhabited by *Eriligáru*' (Irulas). He returned the same day, and as his remarks[2] regarding his walk are confined to a description of the Irulas and the splendid view below him, and say nothing of the hills which he had scaled, it seems clear that he neither really reached the top of them nor had any idea of the beauties which were so short a distance ahead of him and on which he had turned his back. Mr Grigg[3] suggests that the spot he reached was near Arakód, below Rangasvámi Peak, on the old track which then led from Dannáyakankóttai to Kótagiri. It seems likely enough that he followed this, then the only, path and it is quite unlikely that in one day he could have climbed any higher than Arakód. Other contemporary papers[4] show that this latter was then the first village up the hills and distant seven miles from Dannáyakankóttai.

At the same time that Buchanan was set to work to write a description of the acquisitions of 1799, Colonel Colin Mackenzie, the distinguished oriental scholar who collected the valuable series of MSS. which goes by his name, was deputed to survey them. He does not seem to have himself ascended the Nilgiris, but his reports refer to an account and a map of them drawn up by his native surveyors. These cannot now be found; and it is probable that even if they could they would be of little value, for the Collector reported in 1819 that 'owing to the extreme inclemency of the climate' the surveyors were frightened, measured not an acre, and contented themselves with 'making an estimate of the quantity and quality of the land and fixing the old rates of *teerwa* (assessment) upon it.'

[1] Rev. F. Metz' *The tribes inhabiting the Neilgherry Hills* (Madras, 1856) however mentions (p. 44) that the Tódas 'have a tradition that ages ago a small colony of Roman Catholics resided near the Avalanche.'

[2] See his *Mysore, Canara and Malabar* (Higginbotham, 1870), i, 463.

[3] *District Manual*, 277.

[4] William Keys' report on p. 1 of the Appendix to the *District Manual*.

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It was apparently not until 1812[1] that the first Englishmen, an Assistant Revenue Surveyor named William Keys and an apprentice named MacMahon, reached the top of the plateau.

Keys and MacMahon. 1812.

To the present generation, familiar with the beauties of the Nilgiri scenery and the delights of its 'sweet half-English' air, it is little less than amazing that the first sight of the range should not have suggested the possibility of establishing there a sanitarium and a refuge from the heat of the plains, and that the hills should have remained in daily view of all the officers at Coimbatore for years before a single one of them ventured to explore them. But in those days the only hills which were well known were low ranges which were full of malaria, and it was not realized that above a certain height all risk of this disease disappeared. As Lieutenant Burton, writing in 1847, put it,[2] 'we demi-Orientals, who know by experience the dangers of mountain air in India, only wonder at the daring of the man who first planted a roof-tree upon the Neilgherries.'

Keys had been sent up to survey the country by the Collector of Coimbatore and in due course reported on his journey.[3] His only comments on the climate were that it was 'extremely cold and unhealthful, from continual covering of mist and clouds;' that the cattle suffered severely from 'the cold, frost and dews' unless provided with shelter at night; and that he and his companion had 'experienced great inconveniences from the inclemency' of the weather. He went up by the old track which led from Dannáyakankóttai to Arakód and the existing village of Dénád, and penetrated as far west as Kalhatti; but he kept to the lower levels to the north of Ootacamund, and never set eyes on the beautiful valley in which that place lies.

His route is shown on one of the maps in Sir Frederick Price's forthcoming work[4] and that volume deals so exhaustively with the expeditions made by the other early visitors to the range that it will be sufficient here to give the merest résumé of their doings.

[1] Burton, in his *Goa and the Blue Mountains* (London, 1851), 270, says that in 1809 'Dr. Ford and Captain Bevan traversed the hills with a party of Pioneers' and that certain 'deputy surveyors under Colonel Monson partially mapped' them; but neither official records nor such contemporary newspapers as are available contain any confirmation of this statement. The Army lists of 1810 show L. G. Ford as an Assistant Surgeon attached to the 10th N.I. and H. Bevan as an Ensign in the 14th N.I.

[2] *Ibid.*

[3] The report is printed *in extenso* in the *District Manual*, Appendix, xlviii-li.

[4] *Ootacamund, a history*, by Sir Frederick Price, K.C.S.I., formerly Chief Secretary to the Government of Madras (Government Press, Madras, 1908).

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Whish and Kindersley, 1818.

No record survives of any further expedition to the Nilgiris by Europeans until 1818, six years after Keys' visit. In the early part of that year Messrs. J. C. Whish and N. W. Kindersley, respectively Assistant and Second Assistant to the Collector of Coimbatore, went up by the Dannáyakankóttai-Dénád route, crossed the plateau in a south-westerly direction, and descended by the Súndapatti pass from Manjakambai to the Bhaváni valley (by which the Portuguese priests came up in 1602), and so back to Coimbatore. Their exact route across the plateau is not clear, but Sir Frederick Price considers that they must have gone by way of Wellington (then called Jakkatalla) and Kátéri and thus again missed seeing the Ootacamund valley. What took them up to the hills is not certain. One account (Baikie's) says they were in pursuit of a band of the smugglers who in those days, when tobacco was a Government monopoly in Malabar, lived by running it duty-free from Coimbatore district, where it was (and is still) largely grown, to Malabar. Another story (Grigg's) states that they were on a shooting-trip; a third that they were merely exploring; and a fourth (Jervis') that they were after a refractory poligar who had taken refuge on the hills.

John Sullivan, 1819.

Their account of the delights of the climate led to another party—one member of which was Mr. John Sullivan, Collector of Coimbatore, whose name will frequently recur in these pages—following partly in their footsteps in January of the next year 1819. This party again went up from Dannáyakankóttai to Dénád, and thence marched to Dimhatti, just north of Kótagiri, where they pitched their tents.[1] Their route thereafter is shown in Sir Frederick Price's book. Like their predecessors, they missed the Ootacamund basin. One of them wrote to the papers an account of their experiences [2] which laid much emphasis on the facts that the water froze in their chattis at night; that they walked about up and down hill nearly all day 'without experiencing the least inconvenience from heat; often indeed seeking the sunshine as a relief from cold;' and that there was no sickness among their native followers. It mentioned that strawberries, two kinds of 'raspberries,' the hill 'gooseberry,' white roses, marigolds and balsams grew wild; that the crops included wheat, barley, peas, opium, garlic and mustard (all, of course, either rare or quite unknown on the plains); that (another striking contrast to the plains) 'it was impossible to move a quarter of a mile in any direction without crossing streams;' and that the scenery was of

[1] Mr. E. B. Thomas' statement to Mr. Grigg, quoted in the *District Manual*, 280.

[2] This is printed in full in the *District Manual*, Appendix, lii-lv.

'extraordinary grandeur and magnificence: everything that a combination of mountains, valleys, wood and water can afford is to be seen here;' and it wound up by saying 'your readers will perhaps be surprised to learn that frosty regions are to be found at no very great distance from the Presidency [meaning Fort St. George], and within eleven degrees of the equator.'

In May 1819 Mr. Sullivan again went up to the hills for twenty days. He was accompanied by the naturalist M. Leschenault de la Tour (who had been sent on a scientific expedition to India by the French Government, had been brought by sickness 'aux portes du tombeau,' but rapidly recovered in the cool climate)[1] and Assistant Surgeon Jones; and Sir Frederick Price considers that the party stopped at Dimhatti and that Mr. Sullivan must on this occasion have begun the bungalow there in which he afterwards resided.

The first bridle-path to the plateau, 1821.

In March 1819 Mr. Sullivan had asked the Board of Revenue for money to make a rough survey of the fields on the plateau—the existing survey, as has been stated, was only based on estimates—and to make a better way up to them. He justified the expenditure on the latter object by saying that the revenue had been gradually diminishing because the ryots only paid what they pleased, their inaccessible position rendering them 'quite secure from any coercive measures.' The Board sanctioned Rs. 800 for the survey and Rs. 300 for the way up, and both undertakings were entrusted to Lieutenant Evans Macpherson, who subsequently was the builder of 'Cluny Hall' at Ootacamund. The bridle-path up the hills was made from Sirumugai near Méttupálaiyam to Kótagiri and its neighbour Dimhatti; and while the work was going on Lieutenant Macpherson lived at a bungalow he had built at Jakkanéri on the existing ghát to Kótagiri. Pioneers and convict labour from Coimbatore and Salem were utilized. It may here be noted that the path was opened in 1821 and reported as completed in May 1823, and that it remained the best route to the hills from the Coimbatore side until the first Coonoor ghát was made in 1830–32.

Lieutenant Macpherson, at Mr. Sullivan's request, wrote in June 1820 a long report on the hills and their climate,[2] which

[1] An account of his visit and the hills which he wrote in July to a Ceylon paper will be found in the Appendix to Hough's *Letters on the Neilgherries* (London, 1829) and a paper on the flora of the Nilgiris, forwarded with a collection of its plants to the Madras Literary Society, is printed in the *District Manual*, 282–3.

[2] This is printed in full on pp. lv to lx of the Appendix to the *District Manual*, and in the Blue Book on 'Papers relative to the formation of a sanitarium on the Neilgherries for European troops' which was printed for the House of Commons in 1850. The papers in this latter, it may be noted, run from 1821 to 1836 and are of much interest.

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was very flattering to both and was forwarded to Government; and in the same month a letter, evidently from Mr. Sullivan's own pen and couched in the same strain, appeared in the *Madras Gazette*.

The Madras Government appear to have sent on these and other papers to the Government of India, for very shortly afterwards the following notice appeared in the *Gazette of India*:—

'We trust that future reports of the salubrity of this spot will remove all the apprehensions that have been entertained, and that it will become a place of resort for those whose state of health may require that change of temperature which it unquestionably affords. Should a continued residence in these regions prove that the climate is favourable to the European constitution, it may perhaps be deemed expedient hereafter to form a military establishment for pensioners and invalids, with a regular hospital; and if it should become a military station, with Medical Officers attached to it, houses would soon become erected, and conveniences would be provided for those who might be compelled to seek the benefit of the climate; and, in all probability, many persons on the coast, who have withdrawn from active life, but who do not intend to return to their native country, would take up their future residence on the Neilgherry Mountains.'

Reports regarding its climate discredited.

To appreciate the true inwardness of this notice, it must be remembered that there were then no hill-stations in India, and that officials who were broken in health by the climate of the plains used to travel all the way to the Cape or Mauritius (both altogether inferior, climatically, to the Nilgiris) to recoup. The possibility of there existing in South India, close to the equator, a region where the climate was cool and invigorating enough not only to restore invalids to health but to induce retired officials to settle down in it was at that time to most people absolutely incredible. Lieutenant Burton says that when the first visitors to the hills stated that the thermometer there was 25 degrees lower than on the plains 'such a climate within the tropics was considered so great an anomaly that few would believe in its existence.' It was to this popular incredulity that the first sentence of the notice referred. Meanwhile, however, more and more people were satisfying themselves by actual trial of the truth of the statements which had been made. By June 1820 upwards of twenty gentlemen had visited the plateau and one lady (apparently Mrs. Sullivan) 'without any inconvenience to herself and without giving particular trouble to the bearers.'[1] In 1821 some families took up their temporary abode there.[2] They doubtless resided at Dimhatti (where Mr. Sullivan had now a bungalow) or at Kótagiri. Ootacamund was still undiscovered.

[1] *District Manual*, 281.

[2] Hough's *Letters on the Neilgherries*, 10.

First mention of Ootacamund, 1821.

The first mention of that place (under the alias of 'Wotokymund') occurs in a letter of March 1821 to the *Madras Gazette* by an anonymous and unknown correspondent who had penetrated from Dimhatti as far west as Múkarti Peak by way of Ootacamund and Nanjanád. This letter shows that another party had made the same trip by the same route in February of the year before. Who they were is similarly unknown, but they were apparently the first Europeans to set eyes on the Ootacamund basin. Mr. Sullivan, however, was the first European to reside there. In 1822 he began its first house, Stonehouse, the nucleus of the present Government offices, and it was mainly owing to his enthusiasm for the place and his faith in its future that it rapidly developed until it became the capital of a district and the summer head-quarters of the Government.

In the same year appeared the first official medical reports on the hills, written by three officers who had been deputed for the purpose by the Medical Board at Government's request.[1] One of these, by Assistant Surgeon Orton of the 34th Regiment, discussed the best site for an 'establishment for invalids' should it be decided to locate one on the Nilgiris. It pointed out that Dimhatti would be convenient for supplies, owing to the new road and 'on account of the Collector's establishment being placed there,' but showed a preference for the higher country further west and pitched upon the tract immediately west of Shólúr as possessing the greatest number of advantages, including easy access from Mysore by a neighbouring pass. It suggested the erection of a few temporary buildings for sick officers, 'similar to some already raised by Mr. Sullivan for travellers,' so that experiments regarding the effects of the climate might be made.

It becomes the capital of the plateau, 1822.

Mr. Sullivan's prompt action had however already decided the question of the best site for a settlement and he was already at work on the improvement of the spot he had chosen. In September 1822, by which time the building of Stonehouse was well advanced, he requested Government's permission to enclose 500 ballas (1,910 acres) of land, which was then all unoccupied, to make experiments in agriculture and horticulture. 'The experiments,' he said, 'may eventually prove useful to the public, and the expense of making them will be my own.' He took much interest in such matters, had apparently already started a flower and kitchen garden at his bungalow at Dimhatti (see p. 326), had begun another on the saddle just east of Stonehouse itself, and had employed a Scotch gardener named Johnstone to look after it.

[1] See the Parliamentary Blue Book above cited.

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In those days and for some years afterwards, until experience and trial had proved the hope to be vain, it was confidently hoped and believed that because the Nilgiris possessed a climate nearly resembling that of England every description of English fruits, vegetables, flowers and live-stock would flourish as well as they did in the old country, and that the plateau might easily be colonized by military pensioners and Eurasians residing on small holdings and living by agriculture and stock-raising. Government sanctioned Mr. Sullivan's proposal, and the land he obtained was the valley near Bishopsdown. In parts of this some very ancient apple trees may still be seen, but he never enclosed more than a portion of the extensive area for which he had applied.

Progress up to then.

In 1821–22 Captain B. S. Ward, who was originally one of Colonel Colin Mackenzie's assistants and whose work in other parts of the Presidency is well known, surveyed and mapped the hills (excluding the Kundahs and the Ouchterlony Valley, which then belonged to Malabar) and wrote a memoir upon them.[1] This was not submitted to Government until 1826, but was apparently written about the end of 1822 and thus is of interest as showing the progress which had been made up to then in opening up the Nilgiris.

Captain Ward says that in addition to the houses at Dimhatti, Jakkanéri and Ootacamund already mentioned, temporary bungalows for the convenience of travellers had been put up at Kodavamudi (between Kótagiri and Ootacamund), Nanjanád, Kílúr (Manjakambai) and Yellanhalli. European vegetables had been tried and thrived exceedingly well, as also apples, strawberries, etc. There were no crows on the hills at that time. The Sirumugai-Dimhatti route already mentioned was 'the most frequented by travellers and admits of palanquins; horses and laden cattle go up it with much ease.' A temporary bungalow had been built on it at 'Serulu, a delightful situation amidst lofty wood, about 4,000 feet above the plain,' and the distance by it from the bank of the Bhaváni to the Dimhatti bungalow was 16½ miles. The track from Dannáyakankóttai to Dimhatti bungalow was 20 miles 7 furlongs in length, and would 'scarcely admit of laden cattle, being very rugged and rocky.' There was a temporary bungalow at Dénád on this route. The way from the Kílúr bungalow down to Súndapatti was ten miles long 'in a great measure steep' but 'on the whole a tolerable path.' From Dimhatti a path 17 miles 6 furlongs in length ran to Shólúr

[1] This is printed in full on pp. lx to lxxviii of the Appendix to the *District Manual*.

via Kúkal, Kagguchi, Kodavamudi bungalow, Túnéri and Kalhatti; and another, 15¼ miles long, led to Ootacamund by a circuitous route through the present Wellington, Yellanhalli (the present Half Way House on the Coonoor-Ootacamund road, where there was a bungalow), Kéti and the gap through which the Coonoor road now enters the Ootacamund basin. A party of Pioneers were however making a more direct route (since quite abandoned) which took a line further north than the existing Kótagiri-Ootacamund road but entered the Ootacamund basin by the same saddle which the present road crosses. By this the distance between Dimhatti and Ootacamund was ten miles and three furlongs. These Pioneers were commanded by the same Lieutenant Macpherson who had made the Sirumugai ghát, and he had built a bungalow for himself at Rallia about midway between Kótagiri and Ootacamund. A school for the hill people had been started at Dénád, but had failed.

Improvements between 1823 and 1825.

In 1823 Mr. Sullivan obtained Rs. 5,000 from Government for completing the track across the hills to Gúdalúr and the Wynaad, and in 1824 another Rs. 6,500 for opening out the Karkúr ghát to the Wynaad from Malabar (which had been allowed to fall into disrepair) and for improving the route from the top of it to Mysore. In Ootacamund itself, too, he had not been idle, and by 1824 had begun making the lake. But he had not succeeded in inducing Government to agree to his reiterated proposals to establish a sanitarium there.

In September 1825, however, Sir Thomas Munro (then Governor of Madras) appointed a committee consisting of Mr. Sullivan, Lieutenant Evans Macpherson and Staff Surgeon Haines to frame detailed plans for providing accommodation for invalids; and on the recommendation of this body he shortly afterwards sanctioned Rs. 10,000 for purchasing and furnishing for invalids a bungalow at Ootacamund belonging to a Captain Dun which stood on the site of the present Bombay House. To meet the great difficulty of getting supplies at Ootacamund, he also sanctioned the cost of establishing on the hills European military pensioners who were to grow vegetables and raise poultry. But none came.

Sir Thomas Munro's visit, 1826.

In September 1826 Sir Thomas went up to the hills in person for a few days. He marched to Kótagiri and thence along the Pioneers' new track above referred to to Ootacamund, where he was Mr. Sullivan's guest at Stonehouse. Gleig's *Life of Munro* (1830) contains a charming description of the hills which he wrote from Ootacamund to his wife, then on her way to England. He was immensely struck with the view from the hill just north of and

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above the saddle already mentioned by which the road enters the Ootacamund basin, which, he wrote, was 'so grand and magnificent that I shall always regret your not having seen it.' This was apparently a show panorama in those days, for others also mention its beauty. Munro refers to the purple *Strobilanthes*, the 'little loch' which 'winds very beautifully among the smooth green hills' and down which he was rowed, the brightness of the sun which 'poured a dazzling lusture upon everything, as if two suns were shining instead of one' and above all the cold. 'I am writing in a great coat,' he said, 'and my fingers can hardly hold the pen. I am almost afraid to go to bed on account of the cold. The first night I came up the hills I did not sleep at all.'

Government assistance to Ootacamund, 1827.

The result of his visit was further action on the part of Government to utilize Ootacamund as a sanitarium. Advances amounting to Rs. 15,000 were sanctioned in January 1827 to Captain Dun and others to enable them to build bungalows suitable for invalids; and, this having resulted in nothing, Stonehouse was rented by Government in June, at Munro's own suggestion, for two and a half years as quarters for sick officers, while Surgeon Haines, who had for some time been living in Ootacamund, was appointed as Resident Medical Officer. Munro died in July 1827 of cholera at Pattikonda in Kurnool, during a farewell tour to his beloved Ceded Districts, and was succeeded as Governor in October by the Right Honourable Stephen Rumbold Lushington, who did more than any other man to bring to notice and render available the many advantages of Ootacamund as a sanitarium.

People were just beginning to believe the accounts of its climate which had been spread abroad. It is difficult nowadays to understand the obstinate incredulity with which these were for years received. The matter is well put in the *Letters on the Neilgherries* which were written in 1826 to the *Bengal Hurkaru* above the signature 'Philanthropos' (and afterwards published in book form) by the Rev. James Hough, a Chaplain on the Madras establishment who had been to the Nilgiris for his health and was most anxious to acquaint others with the benefits to be derived from the place and to persuade the Government of India to patronize it as a sanitarium. He said:—

'Notwithstanding the uniformity of the accounts given in favour of these mountains by all parties who had ascended them, yet so notorious is the insalubrity of hilly countries in India that it was for some time vain to plead the superior elevation of the Neilgherries, their freedom from jungle, or the healthy state of their inhabitants, to prove them an exception. An inveterate prejudice seemed to exist

which nothing could remove; so that it was long before any persons at a distance could be induced to believe what they heard. At length, however, the number of those who visited the hills became so great, and all the reports of them were so favourable, that incredulity grew ashamed of itself, and was literally forced to surrender: and after seven years quarantine the Indian community are beginning to reap the advantages of this interesting and valuable discovery.'

Progress up to then.

A report of September 1827 by Mr. Sullivan sums up the progress made up to then at Ootacamund. Seventeen European houses had been built, ten of which were private property (five more had been erected at Kótagiri) and

'Roads have been made in all directions about the settlement so that invalids may take either horse or palanquin exercise with almost as much facility as in the low country. A fine piece of water has also been constructed, on which boats are beginning to ply. A subscription has been set on foot for a public reading-room. Ootacamund, in short, is gradually approximating to a state of comfort and civilization.'

Mr. S. R. Lushington becomes Governor.

Mr. Lushington became Governor very shortly after this report was written, and within a month of taking charge sent a long string of questions to the committee already referred to, which was called the 'Ootacamund Station Committee,' about the settlement. The answers to this, dated November 1827, show that Government then possessed in the place four bungalows upon which they had spent Rs. 20,000, and had advanced Rs. 32,000 more for the construction of others (thirteen of which were being put up); that there were at Ootacamund four private bungalows which could be leased, at Kótagiri three, and at Rallia (midway between these two places) another; that Mr. Sullivan had made over the Stonehouse garden, ten acres in extent, to a European on condition that he sold the produce to the public; that advances had been made to natives to open bazaars and that there were then 500 people and 23 bazaars in the place so that 'the market is now well and regularly supplied with every essential article' (except bread); that a public establishment of palanquin-bearers was kept up; and that villages were beginning to spring up at the foot of the passes.

His support of the sanitarium.

On this, Mr. Lushington wrote a lengthy minute [1] detailing the further steps he considered necessary; and on 11th December 1827 Government directed that two companies of Pioneers should be immediately sent to improve the road from Mysore; that bungalows should be built at Billikal, the then top of it, and at Sígúr and Tippakádu in the low country at its foot; that at

[1] See the Blue Book and E.M.C. of 11th December.

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Ootacamund a hospital for 40 invalid soldiers costing Rs. 10,500 (afterwards turned into the District Jail and now used as offices for the deputy tahsildar and others) and ten bungalows to hold four bachelors or two families each, costing Rs. 6,800 apiece, should be built; that the timber for them and their furniture should be supplied by the gun-carriage factory at Seringapatam; that the Commissary-General should send up a supply of chunam and sand; and finally that, since with the expansion which would doubtless follow these steps the care of the Nilgiris would 'be sufficiently burdensome to constitute a separate charge,' Major William Kelso, 26th N.I. (who afterwards built 'Kelso House'), should be appointed 'Commanding Officer on the Neilgherries;' and that the Collectors of the neighbouring districts and even the Resident of Mysore should lend him every assistance in their power so that work might be pushed on at once and thoroughly.

Mr. Sullivan's dream was thus at last fulfilled and Ootacamund became the sanitarium of Madras. But his joy at this consummation of his hopes must have been considerably damped by Government's action in handing over his bantling to the care of another. Differences of opinion between him and Major Kelso arose almost at once in connection with the allotment of land for a military bazaar, which they had been directed to arrange in consultation. Major Kelso wished to mark out a huge cantonment ten or twelve square miles in extent with its bazaar at the spot now called Charing Cross, while Mr. Sullivan desired to restrict it to a small site for a bazaar, which he wanted to locate near the west end of the lake. Eventually a compromise was arranged by which the cantonment bazaar, public offices, hospital, etc. were located on the spur now called Jail Hill above the lake. Mr. Sullivan was popularly considered to have been obstructive in the matter, and he thought it necessary to write privately to the Governor to disavow any such attitude.[1]

His visit to the hills, 1829.

Early in 1829 Mr. Lushington went to Ootacamund—travelling by the Gúdalúr ghát, which was then almost finished—to see how matters were progressing, and while there he laid the foundation stone of St. Stephen's Church (which, see p. 359, was apparently named after him); directed Lieutenant LeHardy to trace the first ghát from Méttupálaiyam to Coonoor, which shortened the distance to Ootacamund by many miles; and gibbeted in severe terms the conduct of Captains Macpherson and Dun and Surgeon Haines in charging exorbitant rents (amounting in some cases to 60 per cent. of the capital value) for the houses they had built from Government advances on land for which they had paid

[1] See his letter of 15th March 1828 printed in Jervis' book, pp. 102-6.

nothing. In the same year he began (on Jail Hill) the hospital referred to on the preceding page ; bought for Government the house now called Bishopsdown from its builder, Mr. Sullivan, for Rs. 35,000 ; and projected on an ambitious scale the experimental farm at Kéti which is referred to on p. 202 below.

Part of the plateau transferred to Malabar, 1830.

Mr. Sullivan took furlough early in 1830 and was succeeded as Collector of Coimbatore by Mr. James Thomas. In January 1830 the greater portion of the hills, including the low country to the north of them but excluding the area round Kótagiri, was transferred to Malabar on the ground that this was the best way of checking the tobacco-smuggling already referred to which went on between Coimbatore and Malabar. Mr. Sullivan protested in a long and powerful minute, but it was not until many years later, when he had become a Member of Council, that his views were allowed to prevail.

About this time a tahsildar with magisterial and revenue powers was appointed to the hills and Surgeon Haines was replaced as Medical Officer by the Dr. R. Baikie whose subsequent book on the Nilgiris (1834) is so well known.

New roads to it.

Orders were also given that a more direct route than that then in use via the Karkúr and Gúdalúr gháts should be opened between Ootacamund and Calicut; and in 1831 Captain W. Murray, in charge of the Pioneers, Major Crewe, Assistant Commissary-General of Ootacamund, and Lieutenant LeHardy (whose Coonoor ghát, begun in 1830, had already ousted all other routes on the Coimbatore side of the plateau) selected the route afterwards called the Sispára ghát (which was then one of the tobacco-smugglers' paths and passes down the extreme south-west corner of the Kundahs) as the best line. Work was begun in January 1832 under Captain Murray, who established Pioneer camps at Avalanche and Sispára, and by the middle of the year he reported that the Kundah pass, as it was then called, was open. The track however was of the roughest, and much more work on it was necessary later.

It was at that time thought that the Coonoor and Sispára passes would become the two main routes to the hills, the objections to the Sígúr and Gúdalúr routes being the imminent risk of malaria which every one ran who travelled through the dense jungles at the bottom of them. So great was the dread of this fever that troops from Bangalore marched via the Coonoor ghát, which was 60 miles further round.

Other improvements not initiated by Government were also carried out at Ootacamund in Mr. Lushington's time. The

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Other improvements.

Church Missionary Society started, about 1832, a school for Europeans, having built for it the house now known as Sylk's Hotel[1]; Sir William Rumbold began, in 1831, the erection of a hotel which is now (see p. 361) the Club; the Bombay Government had purchased, in 1828, as quarters for its invalid officers, the building which was named Bombay House in consequence; and three Parsis from Bombay, among them the firm of Framjee & Co. which was afterwards so well known, had opened large shops. The opening of the Coonoor ghát had also (see p. 228) laid the foundation of the settlement of Coonoor, but had given a blow to Kótagiri and Dimhatti from which neither have ever recovered.

Progress up to 1833.

Meanwhile the Directors, with their usual frugality and caution, were becoming uneasy at the large expenditure which was being incurred on the new health-resort, and in March 1832 asked for detailed particulars of what had been done and of the advantages which were expected to accrue from all this outlay. The Government seem to have been forewarned of this, for while the despatch was on its way they appointed a committee consisting of Captain Eastment, who had succeeded Major Kelso as Officer Commanding, and two other military men to investigate the expenditure incurred up to then, and that still necessary, on buildings, roads, bridges, etc. and to describe the prospects of the station. This body reported in August 1832. It recommended the encouragement of Major Crewe's scheme for the colonization of the hills by Europeans and Eurasians[2] and the formation of a cattle-breeding establishment to supply animals for the public service and salt beef for the Navy; reported on the various public buildings, including St. Stephen's Church, the hospital (usually known as the Convalescent Dépôt), Bishopsdown (which Mr. Lushington had been using as a residence and was then called 'Southdowns'), the different Public Quarters (among which were the houses now called Westlake and Caerlaverock), the Native Barracks (by Charing Cross), the Choultry (near the Willow Bund), the Lock Hospital (below Jail Hill) and the Public Bazaar; suggested the erection of certain bridges in Ootacamund and a bridge of boats across the Bhaváni at Méttupálaiyam; proposed the partial abandonment of the Sirumugai ghát, since the Coonoor and Gúdalúr gháts (though their gradients were as steep as 1 in 8) would on completion, it was declared, 'be easy for travellers and wheeled carriages of any

[1] The prospectus of this will be found in Appendix V of the first edition of Baikie's *Neilgherries*.

[2] This is outlined in Appendix VI of the first edition of Baikie's *Neilgherries*.

description almost throughout the year;' stated that the suitability of the hills as a sanitarium was 'proved beyond a doubt,' backing their opinion with a report specially drawn up by Dr. Baikie; and suggested that the Nilgiris should be committed to 'the superintendence and undivided control of one active officer.'

Mr. Lushington's Government agreed with this last proposal, appointed Major Crewe Commanding Officer and altered certain other appointments; passed orders on the other suggestions in the report; and forwarded that document to the Directors with the observation that they were confident that the Court would be glad to see at how small an expense they had been able 'to open to the sick of all the Presidencies the use of the blessings which have been bestowed upon us in the Nilgiris in a temperate climate, a fertile soil, and a beauty of scenery not surpassed in any region of the globe,' and slyly suggested that 'similar statements of expense incurred at what are denominated the sanitaria of Bengal and Bombay' might be called for, as they had met with 'no persons so deeply and so gratefully impressed with the superior benefits of the Nilgiris as those who visited the hills from Bengal and Bombay.'

Mr. Lushington retired in 1832, having done more for the Nilgiris than any other man. 'It will be the glory of Mr. Lushington's Government,' wrote one officer, 'without any extravagant hyperbole, that he has introduced Europe into Asia, for such are his improvements in the Neilgherries.' His last acts were cordially to thank the various officers who had helped him in the work and to place at the disposal of the sick certain bungalows at Dimhatti (see p. 326) which were his private property. His enthusiasm for the new Paradise which had been opened to the dwellers in the torrid plains was infectious, and one result of it was the publication, during his rule and soon afterwards, of a series of books, brochures and articles on the Nilgiris which reflect in a striking manner the wonder and delight which were then felt in advantages which are now taken as a matter of course and cease to inspire any unwonted rapture. Among these were Captain Harkness', Dr. Baikie's and Captain Jervis' books already often cited, not the least interesting portions of which are the sketches and plans they contain of Ootacamund, Coonoor and Dimhatti in their infancy. Some of those in Baikie's work are so crude that they raise a smile nowadays, but the author was proud of them because they were the 'first attempt to produce coloured landscapes of Indian scenery' and they certainly present a vivid picture of the country as it was in those days.

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The Convalescent Dépôt abolished by Sir F. Adam, 1834.

Mr. Lushington was succeeded as Governor by Sir Frederick Adam. In July 1834, on the latter's motion, the Convalescent Dépôt, which had been moved in 1832 to Southdowns, was abolished and the Lock Hospital was turned into an ordinary hospital. The grounds for this step, which was debated at immense length by the medical authorities, were that the Dépôt had been less used and proved of smaller value than had been anticipated and was expensive to keep up. The medical staff on the hills was also reduced now that Ootacamund was no longer an official sanitarium; Stonehouse, which (see above) had been rented by Government as quarters for sick officers, was given up in this same year; and of the remaining houses then belonging to Government Bombay House was burnt down, Westlake and Caerlaverock were sold in 1836 and Southdowns in 1839.

Other changes by his Government.

Changes in the administration of the hills were also made. The existing arrangement was undoubtedly unsatisfactory. The plateau was divided between the Collectors of Malabar and Coimbatore and consequently neither took much interest in its affairs, while the authority of the military Commandant was confined to Ootacamund itself. The failure to apprehend the perpetrators of a massacre in 1835 by the hill people of 58 Kurumbas suspected of witchcraft drew attention forcibly to the matter, and Government desired to vest in one officer the powers of a Collector, Magistrate and Justice of the Peace (and also certain civil jurisdiction) throughout the hills. This was however found to be impossible without special legislation, and such legislation the Government of India refused to sanction, holding that the necessity for it was not sufficiently proved. In July 1837, therefore, the idea was abandoned and Ootacamund remained a 'military bazaar,' the equivalent, in those days, of a cantonment.

Other acts of Sir Frederick Adam's Government were the fixing of the assessment to be paid for lands taken up by settlers and the virtual acknowledgment of the rights of the Tódas in the plateau, both of which subjects are referred to again in Chapter XI.

Though succeeding Governors evinced a less personal and enthusiastic interest in the Nilgiris than had been shown by Mr. Lushington, the advantages of the hills were now so widely known and appreciated that they progressed rapidly none the less A detailed account of the steps by which this was achieved would occupy far more space than is here available; especially since Sir Frederick Price's forthcoming work treats so exhaustively of the fortunes of Ootacamund, the hub of the district.

Lord Elphinstone became Governor in 1837, and during his rule the hills first began to be opened up for coffee estates. In

1839 Mr. Sullivan, who was now a Member of Council, re-opened the question of the transfer back to Coimbatore of the western portion of the district which had been added to Malabar in 1830. Much correspondence ensued and in the end the Commandant of Ootacamund was appointed Joint Magistrate to the Magistrates of Malabar and Coimbatore and also District Munsif. His designation was changed to Staff Officer (it was changed back again in 1843) and he was given two assistants, one to be in charge of the roads and the other of post offices and miscellaneous work.

The plateau re-annexed to Coimbatore, 1843.

In 1843, however, the Marquis of Tweeddale, who had succeeded Lord Elphinstone, adopted Mr. Sullivan's original proposal and retransferred to Coimbatore the tract taken from it in 1830, leaving to Malabar the country west of the Paikára river and the Kundahs. The Marquis' rule is also memorable for the decision to establish (see p. 341) the dépôt at Wellington.

In 1855 a Principal Sadr Amin's Court was established at Ootacamund and the Commandant ceased to be District Munsif. His duties, however, were still sufficiently varied. He was Magistrate and Justice of the Peace; Director of the Police; Civil, Military and Pension Paymaster; and Station Staff Officer; while in addition, as he complained, 'the public, particularly the European portion of it, insisted upon his fulfilling self-assumed offices similar to the functions of banker, solicitor, notary public, arbitrator and land surveyor.' The Union Jack used to be hoisted on a flagstaff near his office when he was there, and this custom survived until the seventies, by which time a whole series of different flags was necessary to denote the presence of the various officials, and also the arrival of the mails and of the money for pay and pensions. The Joint Magistrate had then to be content with a white and blue flag, the Union Jack being reserved to indicate that the Council was sitting at Stonehouse. In 1855 an Act was passed empowering the Judge of Coimbatore to hold criminal sessions on the hills. In 1859 the post of Commandant was at length altogether abolished, that of Joint Magistrate continuing, and the military police of Ootacamund were placed under the civil authorities.

The Kundahs, etc., added to it, 1860.

In 1858 the Principal Sadr Amin was replaced by a Subordinate Judge and the part of the plateau west of the Paikára, the Kundahs, and the low country to the north of the plateau were put under his jurisdiction. In May 1860 these areas were annexed to the Coimbatore district for revenue purposes. In 1863 the absences of the Coimbatore Judge on the salubrious hills for criminal sessions were found to be so 'frequent and protracted'

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as to interfere with his work at his head-quarters, and a special Civil and Sessions Judge for the Nilgiris was appointed.

It is placed under a Commissioner, 1868.

He, however, had almost nothing to do and in 1868 the post was abolished by an Act which separated the Nilgiris altogether from Coimbatore and placed it under a Commissioner and Assistant Commissioner who had combined revenue, criminal and civil jurisdiction. The Commissioner became Collector, Civil and Sessions Judge and Principal Sadr Amin, and the Assistant Commissioner became Assistant Collector, District Munsif and District Magistrate. The latter officer was aided in his magisterial work by Joint Magistrates for Ootacamund and for Wellington and Coonoor. Both of these were military men, had full magisterial powers, and were assigned a definite territorial jurisdiction; and the former presided regularly at the sittings of the Ootacamund Bench and the latter occasionally at the Kótagiri Bench. The latter, in addition, was Cantonment Magistrate of Wellington and had small cause powers. By the Act of 1868 the Commissioner and his Assistant had also been invested with small cause powers. Their authority in all matters was conterminous, the district not being split into divisions.

The Ouchterlony Valley and the Wynaad added to it.

In 1873 the Ouchterlony Valley, and in 1877 the South-east Wynaad, were added to the district. In other ways also its importance increased rapidly. Coffee, tea and cinchona had been planted on large areas; Ootacamund and Coonoor had been growing daily; the native population of the hills had advanced in numbers and wealth; and the district had become the recognized hot-weather residence of Government.

It becomes a Collectorate, 1882.

In 1882, therefore, it was put on the same footing as other districts and the Commissioner became Collector and the Assistant Commissioner became Head Assistant Collector, while a Deputy Collector was appointed to look after the treasury work and a deputy tahsildar to take charge of the Ootacamund taluk. For purposes of civil and criminal justice the district was put under the Judge of Coimbatore, the Collector was made an Additional Sessions Judge, and a Subordinate Judge, who had also the powers of a first-class magistrate and a small cause court, was appointed to Ootacamund. The office of Joint Magistrate of Ootacamund was abolished; the similar post at Wellington had been done away with shortly before.

These arrangements still continue. The details of revenue and judicial administration are referred to in Chapters XI and XIII respectively.

CHAPTER III.

THE PEOPLE.

GENERAL CHARACTERISTICS—Density of the population—Its growth—Languages spoken—Religions—Parsis—Musalmans. CHRISTIAN MISSIONS—Roman Catholic Mission—The Church Missionary Society—The Church of England Zenana Mission Society—The Basel Lutheran Mission—The American Mission—Other Nonconformists. PRINCIPAL CASTES—Badagas—Kótas—Tódas—Irulas—Kurumbas—Relations between the five tribes—Chettis—Mandádan Chettis—Wynaadan Chettis—Paniyans.

CHAP. III. GENERAL CHARACTERISTICS.

Density of the population.

THE Nilgiri district contains far fewer people than any other Collectorate in the Presidency—fewer, indeed, than many taluks in the plains and less than a fourth of the population of Madras town—and the number of persons to the square mile there is less than in any other part of the Province except Kurnool district and the wild jungly 'Agencies' of the three northern districts. The population is least sparse (220 persons to the square mile) in the Coonoor taluk, but even there it is 50 per square mile below the average for the Presidency as a whole, while in the Ootacamund and Gúdalúr taluks it is as small as 86 and 75 persons respectively to the square mile. Even the Ganjám Agency is less sparsely peopled than this.

Its growth.

During the twenty years 1881–1901 (the census of 1871 did not include the Ouchterlony Valley or the South-east Wynaad, which then belonged to Malabar, so its figures are of no use for purposes of comparison) the population increased at the rate of 22 per cent. This is by no means a rapid advance; but the chief reason why the figure was not higher was that between 1891 and 1901, owing to the decline in the coffee-planting industry, the inhabitants of the Gúdalúr taluk decreased by nearly 17 per cent.—a greater falling off than occurred in that period in any other taluk in the Presidency.

In the ten years 1891–1901 the people of the Coonoor and Ootacamund taluks increased by 22 and 20 per cent. respectively, against the average for the Presidency as a whole of 7 per cent.; but over one-third of this advance occurred in the population of their two head-quarter towns (the inhabitants of both of which have more than doubled since 1871) and was due largely to immigration from the Tamil districts, especially Coimbatore. The

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marginal figures show that the castes indigenous to the plateau increased less rapidly. The people of the Nilgiris consist, indeed, very largely of immigrants. At the census of 1901, out of every 100 of them only 59 were born within the district, while the remaining 41 came from elsewhere.

	Population in 1891.	Population in 1901.	Percentage increase.
Badagas ...	29,362	34,152	16
Kótas ...	1,201	1,267	5
Tódas ...	739	805	9
Kurumbas ...	3,966	4,083	3

The district contains a smaller proportion of females to males than any other in the Presidency, there being only 84 of the former to every 100 of the latter. The chief reason for this is that the coolies on the tea and coffee estates and the other immigrants often leave their womenkind behind them; but in three of the indigenous castes there are also fewer women than men. Among the Tódas there are only 78 females to every 100 males; and among the Kurumbas and Irulas only 90 and 98 respectively. The Badagas, however, include 110, and the Kótas 120, females to every 100 males.

Languages spoken.

The Nilgiris are the most polyglot area in the Presidency. Not only do the Badagas, Tódas, Kótas and Kurumbas each speak a tongue which has been classified as a separate language or dialect, but the plateau stands where three vernaculars meet—the Tamil of Coimbatore, the Malayálam of Malabar and the Canarese of Mysore. No less than eight different languages are spoken by at least three per cent. of the people. These, to give them in the order of the frequency of their occurrence, are Tamil, Badaga, Canarese, Malayálam, Telugu, Hindustáni, English and Kurumbá. In the Coonoor and Ootacamund taluks Tamil and Badaga are each the home-speech of between 30 and 40 per cent. of the people, while in Gúdalúr taluk about a third of the population speaks Tamil, a fifth Malayálam and another fifth Canarese.

Religions.

The education and occupations of the people are referred to in Chapters IX and VI below. By religion 81 in every 100 of them are Hindus or Animists (that is, those who reverence spirits and the like, and do not worship the orthodox Hindu gods), thirteen are Christians and five are Musalmans.

Parsis.

There were some 50 Parsis on the Nilgiris in 1901, a higher number than is usual in Madras districts, and in Ootacamund, near the Army Head-quarters Office, is a Parsi place of burial.

Musalmans.

The Musalmans include, besides the pure-bred members of that faith, a number of the Labbais (Rávutans) and Máppillas (Moplahs) who are supposed to be the offspring of Arabs who

came to the Tamil and Malabar coasts centuries ago and married Hindu women of the country. The Máppillas are commonest in the Wynaad, where they do much of the trade of the country.

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The Christians bear a higher ratio to the rest of the population than in any other Madras district, and this is still the case even if the numerous Europeans and Eurasians among them are left out of account. The Nilgiri plateau, indeed, is unusually well provided with missionary establishments. The educational work these conduct is referred to in Chapter X below. There are Government Chaplains at Ootacamund, Coonoor and Wellington. The churches there, and also that at Kótagiri, are referred to in the accounts of these places in Chapter XV, and the Church of England schools in Chapter X. At the census of 1901 the Native Christians of the district were divided among the various denominations as shown in the margin. It will be seen that the Roman Catholics are far more numerous than all the rest put together.

Roman Catholics	8,971
Anglican Communion ...	890
Lutheran and allied denominations	713
Presbyterian	192
Methodist	164
Baptist	109
Others	51

Roman Catholic Mission.

The Roman Catholic Mission in the district is controlled by the Paris Society for Foreign Missions and comes within the jurisdiction of the Bishop of Coimbatore. Coimbatore was separated in 1846 from the Vicariate Apostolic of Pondicherry and in 1850 was made into a new Vicariate. By the Encyclical Letter of 1st September 1886 it was constituted a diocese, and in 1887 it was made suffragan to the Archbishopric of Pondicherry.

Soon after the first Europeans came to the hills the Catholics who accompanied them built two or three small chapels for themselves.[1] In 1839-41, not long after the Goanese Missions were transferred to the Paris Society, Father J. B. Beauclair, who had been placed in charge of Ootacamund, built in Méttuchéri another chapel, which is now used for the St. Joseph's middle school. The Catholic population increased very rapidly, and in 1859 Father Payeau laid the foundation of the present St. Mary's Church on the Convent Hill. This was gradually completed from subscriptions and a Government grant of Rs. 4,000 at a cost of Rs. 25,000 by his successor, Father J. B. Pierron, and was consecrated on the 15th August 1870. Fourteen days later, the large dome which had been erected over the sanctuary fell in, and subscriptions had to be hastily raised to roof over the gap with corrugated iron. The building has since been considerably

[1] An account of these will be found in Sir Frederick Price's book.

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enlarged and improved. In the cemetery belonging to it is buried General Sir James Dormer, Commander-in-Chief of the Madras Army, who died in May 1893 from wounds inflicted by a tiger.

In time the need of another church was felt, and in 1895 the mission bought some land adjoining 'Belmont' whereon Father E. Foubert erected the Church of the Sacred Heart. This was consecrated in February 1897 by the Bishop of Coimbatore.

The Nazareth Convent near St. Mary's Church was built in 1875–76 by Father Triquet. In this, twenty European nuns maintain the school for European girls referred to on p. 264 and an orphanage which now contains 70 native girls. In the Convent compound is a lower secondary day school for Eurasian children of both sexes under the care of the Mother Superior, while the nuns look after two girls' day schools situated in Méttuchéri and Kándal respectively.

At Coonoor, above the bazaar, stands St. Anthony's Church, which was apparently erected in 1876, and at Wellington a chapel, built in 1887 with the aid of a grant from Government, which is utilized both by the troops there and by the civilian natives. Smaller chapels exist at Kótagiri and at Gúdalúr and other places in the Wynaad. Two European priests are working in Ootacamund and one at each of the other four places named above.

The Church Missionary Society.

The Church Missionary Society was the earliest mission to begin work on the hills. In 1830–31 it built as a school the house now occupied by Sylk's Hotel and (p. 326) owned a series of small bungalows at Dimhatti. Its subsequent proceedings are a mystery, and apparently its work ceased as suddenly as it had begun.

In September 1857[1] a 'Tamil Mission' was organized at Ootacamund and a small church was built near St. Stephen's Church which was used for service on Sundays and as a schoolroom during the week. In 1863 a boarding and day school for Tamil girls was established in a house at the foot of the hill behind the little church. Services in the latter were at one time held by a clergyman of the Church Missionary Society and later the mission and its school were cared for by a local committee, the buildings being vested in the Bishop and Archdeacon of the diocese.

[1] The account below is based on the *South of India Observer* Almanac for 1871, the *District Manual*, 420, and *The South Indian Missions of the C.M.S.* (S.P.C.K. Press, 1905), 12–14.

With the approval of this committee, Archdeacon Dealtry, when Chaplain of Ootacamund, invited the C.M.S. to take charge of the mission, promising liberal aid. The C.M.S. did so, and sent a native pastor to Ootacamund for the purpose. Later on the Chaplain of Coonoor transferred to the care of the same Society another small local mission in that town. In neither case did the Society at first incur any expenditure, grants from the churches and local subscriptions providing the necessary funds.

Both missions developed, and work in the Wynaad also increased; and eventually in 1893 the C.M.S. sent a European missionary to reside in Ootacamund and now contributes a considerable sum towards the annual expenses.

In 1893 St. John's Church at Coonoor, near the hospital, was erected and at Gúdalúr the Government church is used by the Society's preachers. Its work in the Wynaad, however, lies more in the Malabar side of that tract than in the Nilgiri-Wynaad.

The Church of England Zenana Mission Society.

The Church of England Zenana Mission Society maintains an orphanage at Ootacamund and has made attempts to teach and evangelize the Tódas. The Hobart school under its care is referred to in Chapter X.

The Basel Lutheran Mission.

The beginnings of the Basel Lutheran Mission on the hills have been referred to in the account of Kéti on p. 332 below. Its staff now includes five European missionaries. Kéti (where there is an orphanage for boys and a lower secondary school) is now its head-quarters and there is a prosperous station, started in 1867, in Kótagiri, which contains an orphanage for girls and a church presented by Miss M. B. L. Cockburn in 1869. At Nirkambai, three miles south of Kéti, is an out-station attached to Kéti, and there are other stations at Hulikal and Túnéri. In 1886 was started the branch of work known as the Cooly Mission, which ministers specially to labourers on tea and coffee estates.

The American Mission.

The American (Presbyterian) Mission at Coonoor is connected with the American Arcot Mission of the Reformed Church in America. In 1856 the Rev. Joseph Scudder of that mission and his wife were obliged by indifferent health to spend the hot weather in Coonoor, and began work temporarily among the Tamils in the neighbourhood. The Basel Mission and the residents of Coonoor invited them to found a permanent mission there, and in the next year this was done. Later on, the church which stands on a small hill opposite the railway-station was begun. For many years this branch mission was without a resident missionary, but in 1900 the Rev. Jacob Chamberlain, D.D., who has been forty

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years with the mission and is engaged on literary work in Telugu connected with its purposes, was deputed to Coonoor to superintend the work on the Nilgiris in addition to his other duties.

Other Nonconformists.

The first Nonconformist place of worship at Ootacamund was the Zion Chapel, which was built from subscriptions in 1856 and dedicated in December of that year by the Rev. Samuel Hebich of the Basel Mission. The Union Chapel on Church Hill in the same town was built in 1896–98 at a cost of Rs. 18,000, of which Rs. 7,000 was obtained by the sale of the Zion Chapel.

PRINCIPAL CASTES.

The people of the Nilgiris, as has been said, consist largely of immigrants from elsewhere. Besides the Parsis, Musalmans and Native Christians already referred to, there are as many as 19,000 Tamil Paraiyans, 4,500 Tamil Vellálans, and over 5,000 Telugus of various castes. These people do not differ in their ways and customs from their caste-fellows in the districts from which they have come, and need no separate mention.

The Nilgiri plateau, however, is the special home of three communities—the Badagas (cultivators), Kótas (artisans and musicians) and Tódas (graziers)—which are scarcely found elsewhere[1] and so deserve some description, and also contains an unusual number of the two forest tribes called Irulas and Kurumbas; while in the Wynaad the Chettis (landowners) and Paniyans (farm-labourers), both of them interesting castes, are plentiful. Some account of all these people will now be given.

Badagas.

The name Badaga (corrupted to 'Burgher' by the early European visitors to the hills) is the same word as Vadaga and means 'northerner'; and the Badagas of the plateau are the descendants of Canarese who immigrated to it centuries ago from the Mysore country to the north, owing either to famine, political turmoil or local oppression. When this flitting took place there is little to show. It must have occurred after the foundation of the Lingáyat creed in the latter half of the twelfth century, as many of the Badagas are Lingáyats by faith, and some time before the end of the sixteenth century, since in 1602 the Catholic priests from the West Coast (as has already, p. 105, been seen) found them settled on the south of the plateau and observing much the same relations with the Tódas as subsist to this day. The present state of our knowledge does not enable us to fix more nearly the date of the migration. That the language of the Badagas, which is a form of Canarese, should by now have so widely altered from its original as to be classed as a separate dialect argues that the

[1] A class of Badagas lives in the Kollegál hills in Coimbatore district and there are a few of all three tribes in Gúdalúr taluk.

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movement took place nearer the twelfth than the sixteenth century; while, on the other hand, the fact (pointed out by Mr. Rivers) that the Badagas are not mentioned in a single one of the Tódas' legends about their gods, whereas the Kótas, Kurumbas and Irulas each play a part in one or more of these stories, raises the inference that the relations between the Badagas and the Tódas are recent as compared with those between the other tribes. A critical study of the Badaga dialect might perhaps serve to fix within closer limits the date of the migration. As now spoken this tongue contains letters (two forms of 'r', for instance) and numerous words which are otherwise met with only in ancient books and which strike most strangely upon the ear of the present generation of Canarese. The date when some of these letters and words became obsolete might possibly be traced and thus aid in fixing the period when the Badagas left the low country. It is known that the two forms of 'r', for example, had dropped out of use prior to the time of the grammarian Késirája, who lived in the thirteenth century, and that the word *betta* (a hill) which the Badagas use in place of the modern *bettu* is found in the thirteenth century work *Sabdamanidarpana*.

The Badagas are now the agriculturists of the hills; they occupy the whole of the eastern half of the plateau except the tract round Kódanád, but in the west and in the Kundahs they are few in number. They are not agriculturists solely, but work on estates and roads and as market gardeners and general coolies; and some of them are artisans serving their own community (and sometimes others) as bricklayers, carpenters, barbers, washermen, etc. Their relations with the other tribes of the hills are referred to later.

Their villages consist of orderly lines of one-storeyed houses, all alike and nearly always roofed with red tiles, each of which possesses a milk-room, which the women (compare the account of the Tódas below) and young boys are forbidden to enter. Round about the villages are the fields of red soil on which the Badagas raise the korali (*Setaria glauca*) and sámai (*Panicum miliare*) which are their staple diet. Their cultivation is casual, little manure being used and few precautions being taken against the disastrous scouring of the top-soil which takes place each monsoon. The women do nearly all of it except the actual ploughing, and work very long hours. On the other hand the women are very seldom allowed to come into the towns to work for daily wages, while the men do this in large numbers to eke out the scanty profits of their cultivation.

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Both sexes of the Badagas may be recognized at a glance. They are cheery people, of small stature and slightly built, fair-skinned, and dressed always in white cloths with coloured borders of narrow stripes. The men generally wear the usual waist-cloth, upper cloth and turban; but coats are becoming more popular than upper cloths and bright red (or yellow) woollen knitted night-caps are almost as often worn as turbans. The women's waist-cloths are narrow and leave a good deal of the calf exposed, and their upper cloths (which are quite separate) are worn in a characteristic fashion, being passed straight across the breasts and under the arms, and not over one shoulder as usual among the Tamils. Some of them wear a scarf tied round the head. Every woman of marriageable age is tattooed on the forehead and upper arm in some simple design of dots and lines, the elaborate patterns in use in the plains being unknown.

There is no doubt whatever that the Badagas have increased greatly in general prosperity since the advent of Europeans to the hills. The early accounts of them more than once mention their then miserable condition, wretched clothes and emaciated frames; whereas nowadays they almost all have a prosperous air. Even in 1871 only 1,914 houses out of the 13,922 in the district were tiled; whereas now tiles are the rule instead of the exception in Badaga villages.

The earliest account of any length of the sub-divisions and customs of the Badagas was that of the Rev. F. Metz of the Basel Mission, published anonymously in 1856.[1] Mr. Grigg's account in the old *District Manual* was mainly taken from this, and Dr. Shortt's likewise. In the *Madras Christian College Magazine* for April and May 1892 the late Pandit S. M. Natésa Sástri published a fuller account and Mr. Thurston has added items of information in *Museum Bulletin* No. 1 of Vol. II and in his recent *Ethnographic Notes in Southern India*. The following few lines are taken chiefly from these sources.

The Badagas are split into six subdivisions; namely, Udaya (Wodeya), Háruva, Athikári, Kanaka, Badaga and Toreya, of which the Toreyas are the lowest and the servants of the others. The first two subdivisions and many of the third are vegetarians. The Udayas, Athikáris and Kanakas are Lingáyats and the others ordinary Saivites. The Udayas claim, and are admitted, to be superior to all the rest. Their name was, and still is, used as

[1] *The tribes inhabiting the Neilgherry Hills*, from the rough notes of a German Missionary, Madras, 1856.

a title by the aristocracy of Mysore, and they do not intermarry with any of the other subdivisions but act as their priests. The Háruvas come next in the social scale. They wear the Bráhmanical thread and are also priests; and it has been conjectured that at the time of the original migration of the Badagas they were Bráhmans who accompanied them.

The rites and ceremonies of the caste may best be understood by tracing them as they affect the individual from his birth to his death. When a boy is about nine years old he is formally initiated into the mysteries of milking, and thereafter may enter the milk-room already mentioned. The ritual consists in his milking a cow, pouring some of the milk into the household vessels, sprinkling some more over his relations' faces, and placing the rest in the milk-room.

About his thirteenth year, if he is of one of the Lingáyat subdivisions, he is solemnly invested with a lingam by an Udaya. Complicated rites—including the lighting of a sacred fire, the pouring of much milk and praises of, and invocations to, Siva—accompany the ceremony, and that night the boy's parents give a big dinner to their friends.

Girl-babies may be bespoken as brides as soon as they are born on payment of a fee of Rs. 10, which fee may not be increased however beautiful and desirable beyond the ordinary they may grow up to be. When a girl attains puberty she is kept in a special hut, to be found in every Badaga village, till the next full-moon day. While she is there the various families in the village send flour to the hut and all the village maidens meet there and cook it and mess together. On the full-moon day the girl returns to her home, is given a new cloth and sits outside the house until the moon rises. Then she is led up to the house by five aged women and greeted on the threshold by her waiting mother, who blesses her in a set form of words (wishing her a home of her own, a good husband and a strong son) and gives her a dish of food. Of this she eats a little and the rest she takes round to every house in the village, the senior matron in each of them pronouncing the same blessing upon her and inviting her to eat a little of the food in the dish. A day or two afterwards her forehead is tattooed with the marks which proclaim to all and sundry that she is of marriageable age and open to an offer.

Except in the Udaya subdivision, where the parents arrange the marriages after the Continental fashion, the Badaga young men and maidens are allowed to choose their own partners for

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life and even to make trial of one another's qualities before entering irrevocably upon matrimony. The suitor goes to his innamorata's parents, makes them a few presents, and is then invited to pass a few days with the girl. The couple treat one another as husband and wife during the period of probation and no stigma attaches to either if at the end of that time they decide that they are not suited to one another. Cases have however occurred (Captain Harkness' book quotes one) in which the young Lotharios of the caste have taken an undue advantage of the possibilities of this odd system.

The marriage ceremonies are quite simple: they take place in the bridegroom's house and consist chiefly in the girl going to fetch water (as a sign that she has entered upon her household duties) and making salaams to the members of the bridegroom's family, and in the playing of much music by the Kótas and the consumption of a big supper at the end of the day. A cloth-fee is paid for the girl and in addition a bride-price which varies with her qualifications as a field-labourer and runs up to as much as Rs. 200.

Until the woman becomes pregnant separations are permitted without trouble or scandal as long as these two sums are returned, and thus the marriage has a further period of probation. But when a woman becomes pregnant a solemn ceremony is performed in the seventh month (compare the bow-giving rite among the Tódas) which fixes the paternity of the child and after which the couple can only separate after a regular divorce has been granted by a council of the village elders. The ceremony consists in the husband tying round the wife's neck a string with the marriage badge attached, and it is done in the presence of all the relations and to the inevitable accompaniment of Kóta music.

Divorces are common, and no stigma attaches to a woman who divorces a husband or two before she settles down contentedly. The children go to the husband. These probationary marriages and easy divorces have led to the morality of the Badaga women being slightingly referred to; but any laxity with men outside the caste is severely punished—excommunication being the sentence.

The funerals of the Badagas (like those of the Tódas) are more complicated than any other of their domestic ceremonies. When any one is sick unto death and recovery is hopeless he or she is given a small gold coin—a Víraráya fanam worth four annas

—to swallow. As soon as death ensues, a man of the Toreya subdivision is sent round to the neighbouring villages to announce the fact. On reaching any of them he removes his turban and then tells his tidings.

On the day of the funeral the corpse is carried on a cot to an open space, a buffalo is led thrice round it and the hand of the dead is raised and placed upon the animal's horns. This again resembles the Tóda ceremony and a further likeness thereto is sometimes provided by the pursuit and forcible capture of a buffalo, which is then dragged up to the corpse. A funeral car is constructed (which in the case of the wealthy is an elaborate erection of several storeys decked with cloths)[1] and on this is placed the body, dressed in its garments, covered with a new cloth, and with a couple of silver coins stuck on its forehead. The relations wail and lament around the body, salute it, and then dance round the car to the accompaniment of Kóta music, the men dressed in gaudy petticoats of a special kind and smart turbans. The Kóta who did smith's work for the deceased while he was yet alive brings an iron sickle with imitation buffalo horns on the tip of it, and this, with a hatchet, a flute and a walking-stick is placed on the car. The car is next taken to the burning-ground, stripped of its hangings and hacked to pieces; the widow takes her last leave of her husband, depositing some of her jewels on the cot; and then an elder of the tribe stands at the head of the corpse and chants thrice a long litany reciting all the sins that the deceased might have committed and declaring that the weight of all of them is transferred to a scape-calf which he names. Nowadays no calf is actually produced, but thirty-five years ago (according to Mr. C. E. Gover's account) the animal was brought up and as each sin was enumerated the elder laid his hand upon it in token that the blame was transferred to it, and at the end the animal was let loose like the Biblical scape-goat of the Jews. Messrs. Thurston, Metz and Natésa Sástri all give examples of these litanies. Parts of one of them run as follows :—

> This is the death of Ándi.
> In his memory the calf of the cow Bellé has been set free.
> From this world to the other
> He goes in a car.
> Everything the man did in this world,
> All the sins committed by the ancestors,

[1] A picture of one forms the frontispiece to Mr. Thurston's *Ethnographic Notes.*

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All the sins committed by his forefathers,
All the sins committed by his parents,
All the sins committed by himself—
Shifting the boundary line,
Telling lies,
Troubling the poor and cripples,
Being jealous of the good crops of others,
Using a calf set free at a funeral,
Carrying tales to the higher authorities,
Killing snakes and cows,
Showing a wrong path,

[and so on through a long catalogue of many other sins].

* * * *

Though there be three hundred such sins,
Let them all go with the calf set free to-day.
May the sins be completely removed!

* * * *

Holding the feet of the calf set free to-day,
May he reach the abode of Siva!

After more rites, the body is then burnt or buried. Next day milk is poured on the grave, or, if the body was burnt, a few of the bones are collected and reverently placed in a pit which every hamlet keeps for this purpose.

The ceremonies at Udaya funerals differ in several particulars and the dead of this subdivision are always buried (like strict Lingáyats elsewhere) in a sitting posture.

At long intervals a ceremony called manavalai is held in memory of the dead. A gorgeous many-storeyed funeral car is made and on the lowest tier of this is placed a cot on which are put the ear-rings of all those who have died since the ceremony was last performed. A dance to Kóta music takes place round the car, the performers being dressed in white petticoats and gaudy jackets, and at length the cot is taken to the cremation-ground and burnt.

The religious beliefs of the Badagas are very catholic. In addition to Siva in his forms Mahálingasvámi, Mahádésvara, etc., they worship Vishnu as Rangasvámi on the Rangasvámi Peak referred to on p. 340 and at the big Karaimadai temple near Méttupálaiyam; Gangamma, the goddess of water; several other minor deities; and a number of deified ancestors like the Karairáya referred to in the account of Kótagiri on p. 338. The most popular of the latter are Hétti (Héttamma), a woman who committed sati at the death of her husband, and Hiriya (or Hiriodiya) the

husband. There are many shrines to Hétti, and at these fire-walking festivals are common. Those at Mélúr and Dénád are shortly referred to in the accounts of those places in Chapter XV below, whence it will be seen that the ceremonies are agricultural in their essence and are connected with the beginning of the cultivation season and the prosperity of the crops. A Kurumba is sent for and paid to plough the first furrow and scatter the first seeds, the idea being that all this tribe are sorcerers who can avert all evil if they choose. Sometimes the shrines to deified ancestors are placed near the sculptured cromlechs which are common on the plateau. Other facts connecting the Badagas with these monuments have been mentioned on p. 100 above.

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The Badagas are very fond of music and song. 'Their tunes are quaint and original and, when heard from a distance, have an uncultured sweetness about them in keeping with the soft colouring and wild beauty of the scenery of the land which is their home.' They have a great répertoire of ballads handed down from their forefathers.[1] Mr. Metz collected many of these and it is a pity that he never published them, for, like the similar Tóda chants, they would probably be found to contain grains of historical matter which would throw more light than is at present available upon the migrations and original home of the caste.

Kótas.

The Kótas [2] are the musicians and artisans of the hills and are also farmers of considerable skill. They reside in six villages (called Kóta-kéris or 'Kóta streets') on the plateau and a seventh near Gúdalúr (the people of which last differ but little from their brethren on the hills) which are big and untidy collections of thatched (rarely tiled) huts each of which has the usual verandah in front of it. The pillars of this are sometimes of stone and not infrequently rudely carved by craftsmen from the plains. The Kótas are of a darker complexion than the Badagas, and very dirty in their persons. The men and women dress in filthy cloths that may once have been white, which they tie much like the Tamils of the plains. The men may be recognized at a glance by their fashion of wearing their long straight hair, which they part in the middle and tie in a bunch behind.

Though intelligent and hardworking, the Kótas are held to be the lowest in the social scale of all the communities on the

[1] Three of these are quoted in Mr. C. E. Gover's *Folk Songs of Southern India* (Higginbotham, Madras) and Mr. Grigg gives an example in the original *District Manual*; but these are too long to quote here.

[2] Fuller particulars will be found in Metz, Breeks' *Primitive Tribes and Monuments*, Dr. Shortt's book, and Mr. Thurston's detailed account in *Madras Museum Bulletin* No. 4 (1896).

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hills because they eat carrion—even when in an advanced state of decomposition. Metz says that they justify the habit by declaring that when their god Kámataráya made the Tódas, Kurumbas and Kótas out of three drops of his perspiration he permitted the first to eat milk and butter, the second meat, and the third carrion. They never look so sleek, Metz continues, as when there is murrain among the Tóda buffaloes; and their unpleasant diet certainly agrees with them, as they are a sturdy community. They are also overfond of strong waters and of opium.

Whence they originally came there is little to show. Dr. Caldwell thought their language was 'an old and very rude dialect of Canarese.' Their own legends say that they once lived on a hill in Mysore called Kollimalai, whence they moved to the Nilgiris. They now act as musicians and artisans to the other hill people, the men being goldsmiths, blacksmiths, carpenters, leather-workers and so forth, and the women making pots on a rude kind of potter's wheel. For these services they are paid by the other tribes with doles of grain and the bodies of dead cattle and buffaloes. They keep cattle, but never milk them. Like the Badagas, they pay the Tódas the periodical contribution of grain called *gúdu*.

They are divided into three *kéris* or streets; namely, upper, lower and middle, the people of each of which are forbidden to marry among themselves.

Marriages are arranged by the parents, and a betrothal is signified by the boy's going to the house of the girl selected for him, making obeisance to her parents, and presenting them with a four-anna bit. The wedding ceremony is of the simplest, the lad merely taking the maid to his house (after paying the bride-price) and providing a feast for the relations. A man does not generally marry a second wife unless the first is childless. Divorce is allowed for incompatibility of temper, drunkenness, immorality or laziness on the part of the wife, and, as among the Badagas, is granted by a village council of elders. Cases of difficulty relating to this and other matters are referred to a general council of the elders of the seven villages.

When a woman is going to have a baby she retires to a hut set aside for the purpose which is divided into two rooms—one serving as a maternity hospital and the other as a dwelling for women during their seasons. There she remains until the full moon after the child is born, when she moves for a space to another special hut. When she may at length return home the

relatives are feasted and the baby is named by the head of the village. First-born sons are always called Komuttan after the god Kámataráya referred to later; and a common name for girls is Mádi, one of the names of that deity's spouse.

When a person is at the point of death the same gold fanam as the Badagas use is placed in his or her mouth. The funeral ceremonies also closely resemble those of the Badagas. After death the corpse is laid on its back with its thumbs tied together across its chest, and the relations come and salute it. A wooden car decorated with cloths is placed in front of the dead man's house and while the relations mourn the other Kótas dance. A buffalo is then killed and its flesh distributed. Then the corpse, gorgeously arrayed and with coins gummed to its forehead, is placed on the lowest storey of the car, and near it are put iron implements, tobacco, and rice and other victuals. The dancing and mourning (and also a great deal of drinking) proceed for many hours. At length the car and the cot are carried off to the funeral-place, and there another buffalo is slain and its body is taken to the corpse, which is made to salute it with the right hand. The deceased's widow is next brought up, stripped of her jewellery and made to perform her last obeisance to her lord. The corpse and car are then carried on to the burning-ground, where the latter is quickly demolished and the former placed upon the pyre.

The next day the smouldering ashes are extinguished with water, collected, and buried in a pit, the spot being marked with stones.

In December a ceremony resembling the 'dry funeral' of the Tódas described below is performed. Eight days before it, a dance takes place in front of the houses in which deaths have occurred during the year. On the appointed date the relatives of the dead bring buffalo skulls wrapped in cloths, put them on a cot and do obeisance to them by touching them with their foreheads. These are next carried off to the funeral ground and there a buffalo is killed for every death which is being commemorated and the skulls are burned with rice, tobacco and the other articles which accompanied the corpse at the real funeral, and also with a long pole decorated with cowries and similar to that used by the Tódas in their funeral rites. Water is eventually poured over the ashes and the whole party remains there all night. A dance and feast next morning conclude the ceremony.

The Kótas' chief god is the Kámataráya already mentioned, and his priesthood consists of hereditary 'dévádis' and of pújáris

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chosen by them. Neither of these are distinguished by any particular dress, and they marry and subsist just like any others of the tribe. Kámataráya's consort is named Kálikai, and every Kóta village boasts a temple to each of them in which they are represented by a thin silver plate. An annual festival in their honour is held to induce them to grant the Kótas all prosperity. It begins on the first Monday after the January new moon and lasts for about a fortnight. This period is treated as a general holiday and is declared to be a scene of continuous licentiousness, indecent dancing taking place between men and women. The chief Badagas of the neighbourhood, says Metz, are required to attend this; and any refusal to do so would be avenged by the Kótas boycotting them and refusing to work for them. Items in the ceremonies include keeping a fire burning the whole time, re-roofing the temples with bamboos, etc., offering food to the god, and an elaborate dance in which the men, dressed up in special and gaudy petticoats, jackets, turbans, etc., take the leading roles. A party also goes out with bows and arrows to try and kill some kind of game, and on their return a fire is made by friction, the dévádi heats a bit of iron in this and the pújári makes a pretence of hammering it out.

Tódas.

Of the three tribes which are practically peculiar to the Nilgiris (the Badagas, Kótas and Tódas) the third has attracted far more attention than the others. The Tódas are a purely pastoral people, who live on the produce of their herds of huge buffaloes (see p. 28) and gifts of grain from the other tribes (p. 270); claim to be the original inhabitants of the hills and lords of the soil (p. 270); dwell in lazy, Arcadian fashion in little scattered groups of quaint waggon-roofed huts, always most picturesquely situated; are much taller and fairer than the general run of the inhabitants of South India; in dress, appearance and language differ widely from their neighbours; have attractively dignified and fearless manners when conversing with Europeans; and practise unusual customs, such as polyandry, infanticide and buffalo sacrifices at their funerals.

These and other attributes resulted in their arousing deep interest in the early European visitors to the hills, and many enthusiasts rushed into print with accounts of them. Some declared their Roman noses and flowing robes to be sure indications that they were the survivals of a Roman colony; others adduced their Jewish cast of countenance as proof that they were the remnants of the lost tribes of the Hebrews; and one gentle-

man[1] set himself to demonstrate that they were a relic of the ancient Scythian invaders who, driven from place to place by the hostility of the dwellers in the plains, had at length taken refuge on this plateau. A caustic contemporary criticism of this last theorist, which applies equally to several of his fellows, said :—

'He has treated the subject with remarkable acuteness and displayed much curious antiquarian lore; by systematically magnifying every mote of resemblance, and by pertinaciously neglecting or despising every beam of dissimilitude, together with a little of the freedom of assertion allowed to system-spinners, he has succeeded in erecting a noble edifice, which lacks nothing but a foundation.'

The proximity of the Tódas to a favourite hill-station amidst ideal surroundings for ethnographic enquiry has continued to keep alive the extraordinary interest they awakened from the first, and the literature regarding them is now extensive.[2] It will suffice to give here an outline of their characteristics and ways.

They are tall (the average height of the men being 5 ft. 7 in. and of the women 5 ft. 1 in.), well-proportioned, dolichocephalic and fairer than the people of the plains. The men are extremely hirsute and the women wear long side-locks which they curl with great care on a round stick and smear with butter. The men are strong, agile, untiring, intelligent, possessed of an 'absolute belief in their own superiority over the surrounding races,' grave and dignified, and yet cheerful and well-disposed. The women are far less intelligent, often handsome and sometimes of frail morals. The Tódas live in little hamlets which they style *mads* or *marths*, but which Europeans generally call by the Badaga name of *mands*. These consist of only four or five dwelling-huts, a larger one forming the dairy, and a buffalo-pen, and are usually prettily situated and near a shóla and a stream. The huts are quaint erections which may be likened to the half of a barrel cut through its longer axis. Wide eaves overshadow the front of them, and on this side is the only door, an entrance so small and low that it is necessary to go

[1] Captain H. Congreve of the Madras Artillery; see his article in M.J.L.S., XIV (1847), 77–146, originally contributed in 1844–45 to the *Madras Spectator*.

[2] The more important of these books are Captain H. Harkness' *Description of a singular aboriginal race inhabiting the summit of the Neilgherry hills* (London, 1832); Rev. F. Metz' *The Tribes inhabiting the Neilgherry hills* (Madras, 1856); Colonel W. E. Marshall's *A Phrenologist among the Todas* (London, 1873); Mr. E. Thurston's *Madras Museum Bulletins*, i, 141 and iv, 1; and Mr. W. H. R. Rivers' recent exhaustive work, *The Todas* (Macmillan, 1906). This last, upon which the following account is almost exclusively based, contains a complete bibliography of the subject, enumerating 42 papers and books.

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down on all fours to get through it. This is flanked without on either side by a sort of earthen bench. Inside, two raised platforms, for sleeping on, flank either side of the door and in the mud floor is a hole for pounding grain. The house is surrounded by a wall containing only one opening, which is purposely made too small to admit a buffalo. Both men and women wear an upper mantle of double cloth called the *putkuli*, white with red and blue embroidered borders and woven near Méttupálaiyam, which is thrown right round the shoulders; and a similar loin-cloth of the usual cut. The men have a langúti as well. Between the folds of the double *putkuli* is a capacious pocket. Neither sex use any covering for the head. The women are generally tattooed.

The Tódas are divided into two endogamous subdivisions called Tarthar and Teivali, which Mr. Rivers believes to have been derived from two different tribes which reached the hills at different periods, and which are again split into certain exogamous septs, or clans, each of which inhabits certain definite mands. They never cultivate, nor do any work except tending their buffaloes (the only animals they rear) and making butter and ghí from the milk these beasts provide. In recent years one or two of them have obtained work on coffee plantations; but it is said that neither they nor their employers were pleased with the result of the experiment. On rising in the morning the men salute the sun with a quaint gesture, putting the thumb to the nose and spreading out the fingers in a manner similar to the English school-boy's token of derision, let the buffaloes out of the pen, churn the previous night's milk, milk the buffaloes, and then drive the herd to the grazing ground and laze away the rest of the day there until it is time to come home to the evening meal, milk the buffaloes again, churn more butter, salute the lamp as the sun was saluted, and retire to rest. The women are not allowed to have anything to do with the milking or churning, but confine themselves to ordinary household duties.

It is not to be wondered at that milk and its products, the chief food of the tribe, should have come gradually to be regarded with a solicitude approaching to reverence, and nowadays the operations in the dairy are unique in this part of India in the manner in which they form the basis of the greater part of the religious ritual of the Tódas. Certain of the buffaloes are sacred animals and are attended by priests (*pálol*) specially set apart who are aided by a servant (*kaltmokh*) who among other duties acts as intermediary between them and the other Tódas; the dairies in which the holy milk is churned are in effect the temples of the

tribe; and the operations therein have become a religious ceremonial and are accompanied by several set forms of prayer for the health of the buffaloes and abundance of grazing and water.

Among the Tarthars, the dairies are of several grades of sanctity. In some a sacred bell (perhaps a symbol of the holy buffaloes which wear such ornaments) is kept; five (called *ti* or, by the Badagas, *tirieri*) are far removed from any mand and appropriated to special herds of special sacredness; most of them are like an ordinary Tóda house, but larger; while three or four are circular with a conical roof, the best known among which is that near the top of the Sígúr ghát which is called by the Europeans of Ootacamund 'the Tóda cathedral.'

Generally, the dairies are divided into an outer and an inner room, in the former of which the dairyman-priest (*pálol*) usually sleeps and in the latter (which he alone may enter) the churning and so on are performed. In this latter are kept the various vessels and churns; and those which are used to carry the finished product to ordinary mortals are kept rigorously apart from those which have direct connection with the sacred buffaloes and their milk. A special stream or a special part of the common stream is carefully reserved for use in the dairy, and when the priest is in the building he must wear only a langúti. On all occasions, too, his mantle is of a special kind, generally black or grey. If he sleeps in the ordinary huts he must touch nothing but the floor and the sleeping-bench, on pain of losing his office. At the higher-grade dairies the ritual accompanying the churning is most elaborate and the priests may not go to the bazaar and are restricted in their intercourse with women. Women are strictly forbidden to approach even the ordinary dairies. The priest at a *ti* dairy, called pálol, has to be altogether celibate, may not be approached by any ordinary Tóda except on Mondays and Thursdays, and loses his office if he or his dairy is touched by any unconsecrated person. His recompense is the income he makes from the sale of the ghí. There is evidence that the rigour of this elaborate ceremonial is weakening and that the number of the highest grade of dairy, the *ti*, is less than it was in even comparatively recent times.

The various classes of priests at the dairies are required to undergo certain ordination ceremonies before they assume charge of their sacred task, and the complexity of these varies directly with the holiness of the dairy concerned. The essential feature of them all is purification by washing with and drinking the water of the sacred stream which is set apart for the use of the dairy; the bark and leaves of the sacred *tudr* tree (*Meliosma*

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pungens or *Wightii*, which two closely resemble one another) and the leaves of the plant *muli* (*Rubus ellipticus*) play an important part in them, as in much other Tóda ceremonial; the numbers three and seven frequently occur in the ritual; in certain cases the priest is required to sleep one or more nights almost naked in a shóla; fire required during the ceremonies must be made by friction; and the final stage of induction is marked by the priest touching some sacred object of the dairy. The details are given in full in Mr. Rivers' book.

Migrations of the sacred herds from one part of the hills to another are periodically necessary in order to obtain sufficient grazing. From December to March, for example, when the grass round Ootacamund and Paikára is dried up, most of the buffaloes are driven out to the Kundahs, where the heavier rainfall keeps the pasture green for a longer period. Even these migrations are attended with much elaborate ritual, special attention being paid to the importance of keeping rigorously apart the two sets of dairy vessels already referred to as being respectively sacred and profane.

The Tódas possess but vague ideas about the various deities to whom they pay reverence. Their typical deity 'lives much the same kind of life as the mortal Tóda, having his dairies and his buffaloes. The sacred dairies and the sacred buffaloes are still regarded as being in some measure the property of the gods, and the dairymen are looked upon as their priests.' The gods mostly inhabit the tops of the highest hills, but are never seen by mortals. Each clan of the tribe has a deity specially connected with it, who is believed to have been its ruler in the past ages when gods and men lived together on the plateau.

Two deities, however, stand out pre-eminent among the rest; namely, a god called On and a goddess (his sister) known as Teikirzi. On was the son of Pithi, the earliest immortal of whom tradition speaks. He created men and buffaloes and became the ruler of Amnordr, the world of the dead, where he now lives. He and his wife went one day to the top of the Kundahs and he laid an iron bar right across them. Standing at one end of this, he brought forth 1,600 buffaloes from the earth, and his wife at the other end produced 1,800. The first lot were the progenitors of the sacred herds and the second the first parents of the ordinary buffaloes. Holding on to the tail of the last of the former, came out of the earth a man, who was the first Tóda. On took one of his ribs and made from it the first Tóda woman. On's son was accidentally drowned, and in his grief On left the plateau

and went to the world of the dead to be with his child. His sister Teikirzi then took his place as ruler over the Tódas. It was she who originated most of their rites and ceremonies, and who divided them and their buffaloes into the clans and classes which still exist.

Some of the gods appear to be deifications of mortal men, and their doings are recounted in numerous legends connected directly with several of the peaks and lakes of the hills, among them Hulikal Drug near Coonoor and the Marlimand reservoir at Ootacamund. One of the best-known of these deifications is Kwoten. One day when this man was drinking from a stream which rises in the Kundahs he saw in the water a golden hair of great length and beauty. He went up the stream to discover the woman to whom it belonged, found her, and fell in love with her. But she was the goddess Terkosh, and his presumption met its punishment: he was soon after spirited away for ever with all his buffaloes, only his silver ring (which is still preserved) remaining behind on the sambhar skin on which he had been sleeping.

In addition to their own gods, the Tódas also pay reverence to the Hindu deities of certain well-known temples in the plains—especially Nanjandísvara of Nanjangód; but this worship is usually accorded only on special occasions for special purposes—notably by childless couples desirous of offspring.

Besides the priests at the dairies, and quite separate from them, the Tódas have prophets, magicians and medicine-men. The prophets, or diviners, are supposed to be each inspired by certain definite gods and they utter their prophecies (usually working in pairs) during a fit of frenzy and in a language not their own, such as Malayálam. They are consulted in cases of sickness among the Tódas or their buffaloes or in the event of other difficulties or misadventures.

The power of sorcery is declared to belong to certain families and to be inherited. The average Tóda knows little of it, and is most anxious to discover more. The diviners frequently declare that such and such a misfortune is due to the magic practised by such and such a known sorcerer, and the latter is then propitiated by the victim or his relations and induced by *douceurs* to remove the spell. One method of laying a spell upon an enemy is to take some human hair, tie five stones up in it, wrap them in a bit of cloth, pronounce a curse over this bundle, and hide it secretly in the thatch of the enemy's house. Sometimes a bone or a lime is buried in a shóla near the intended victim's mand. Tóda

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sorcerers are dreaded by the Badagas as much as by their fellow tribesmen, and this is believed to be one reason why the Badagas still continue to pay the Tódas the *gúdu* or tribute of grain referred to on p. 270 below. About ten years ago the Badagas of Nanjanád killed a Tóda sorcerer because they believed him to have caused the death of one of their children. On the other hand the Tódas are excessively afraid of the necromancy of the Kurumbas.

Belief in the evil eye and in the bad effects of words of praise is as prevalent as in other castes, and to remove the malign influence certain definite methods are practised by the medicine-men. Stomach-ache so caused is cured, for example, by rubbing the affected spot, putting salt on a corner of the patient's mantle, stroking this with a thorn of *Solanum indicum* and then throwing the thorn and some of the salt into fire to the accompaniment of incantations. Again, if a buffalo is lost she can be preserved from harm until she is found by taking three stones secretly at night to the front of the dairy or hut to which she belongs, uttering a spell over them and hiding them in the thatch.

The higher powers are periodically propitiated by the Tódas in several ways. Sacrifices of buffalo calves are made at least once annually at each mand and thrice annually at each *ti*. These, again, are accompanied by much minute ceremonial, which is described by Mr. Rivers in detail. The flesh is eaten. The Tódas also eat sambhar meat when they get the chance. Strong drink is not forbidden them and on 'shandy' days at Ootacamund it is not uncommon to see one or two backsliders considerably the worse for its effects. Annually, also, in October fires are lighted by the *pálols* and their *kaltmokhs*, to the accompaniment of prayers for the increase of honey and fruit, at the foot of certain high hills. Sin-offerings, and offerings to remove misfortune are also made, a buffalo being the victim; offences against the ritual of the dairy require somewhat similar expiation; and ills due to violence done to general religious rules are removed by giving, with complex ceremonial, a buffalo calf, a piece of cloth, or a silver ring to the members of the two *kudrs*, or divisions into which most of the clans are split. The penalties appropriate to each of these offences are usually prescribed by the diviners.

At or about the fifth month of a woman's pregnancy she is required to live in a rude hut at some little distance from the mand and (after several ceremonies) to burn herself in two places on each wrist with a lighted roll of thread. She stays a month in the hut and is then purified by drinking milk (amid more ritual) and allowed to come back again to her home.

About the seventh month of her pregnancy, the woman has to perform the bow and arrow ceremony. She and whichever of her husbands is selected as the father of the child go into a shóla near the mand; he cuts a triangular niche in a *Eugenia Arnottiana* tree and places a lighted lamp in it; the pair make a bow of *Sophora glauca* wood, fit it with an arrow of *Andropogon schœnanthus* grass and return to the tree where the lamp stands; after mutual salutations between them and their relations, the husband hands the woman the bow; and she holds it and gazes at the light for an hour or until it goes out. The pair then cock and eat food and they and all the inhabitants of the mand pass the night in the shóla. This ceremony is only performed at a first pregnancy or when it is desired to appoint another husband as the father of the woman's children. The man who performs it with the woman is regarded ever after as the father of her child. If a woman dies unmarried or childless, both the above ceremonies--the wrist-branding and the handing of the bow and arrow —are performed at her funeral.

Three days after the child is born, the woman carries it to the same hut where the wrist-burning occurred (taking the greatest care to shelter herself and it from the influence of the star Keirt, which is near the sun, by turning her back to the sun) and there remains three weeks or a month. The child's face may not be seen by any one for three months. At the end of that time it is uncovered, the child is named and its head is shaved. The ears are pierced some time later with much ceremony.

The funeral rites of a Tóda may be prolonged over many months. Soon after death the body is burnt, the ceremony being usually known to Europeans by its Badaga name of the 'green funeral'; after a varying interval a second ceremony, called the 'dry funeral,' connected with certain relics of the deceased preserved from the other, is carried out; and lastly on the next day the relics are burnt and the ashes buried within an *ázáram* or circle of stones. The Tódas make no such secret of their funeral rites as of the ritual of their dairies, and even invite guests to them. All three stages have consequently been often described.

At the green funeral, the corpse is carried, fully dressed, on a bier to the funeral place. All those present touch it with their foreheads and it is then put in a rude hut constructed for the purpose. The women collect round this and mourn and lament in a quaint manner, sitting in pairs and pressing their foreheads together, while the men prepare the pyre. Subsequent ceremonies

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differ somewhat with the sex of the deceased. If he be a man, earth is dug from the entrance of a buffalo pen and the near relatives throw three handfuls of it into the pen and three over the corpse; if she be a woman, certain leaves are plucked and put in her right armlet. The earth-throwing is perhaps a survival of a distant period when the dead were buried instead of cremated.

Next two buffaloes, one of which (at a man's funeral) must belong to the sacred herds, are pursued and caught and dragged by force to an appointed place to be killed. Formerly many more were slain, but Government intervened and limited the number. This capturing of the buffaloes is often an exciting affair; a herd is driven with loud shouts at top speed towards the place of the funeral by one lot of Tódas, so that they are fairly infuriated before they reach it, and then another lot dash out to meet them. To avoid the latter, the animals scatter and rush wildly about, and the Tódas pursue them until they at length succeed in flinging themselves on to the horns of the two selected beasts and bearing them down to the ground by sheer force. At a Tarthar funeral Teivali men catch them, and vice versa. The operation is critically watched, and reputations are made or marred by the degree of skill displayed. Now and again the men are considerably injured by the maddened animals.

One of the captured buffaloes is next driven to the appointed place; a bell is placed round its neck; its back, head and horns are rubbed with butter; and it is killed by a blow from the back of an axe. The corpse is then brought and placed near its head and the right hand, if the deceased was a man, is made to clasp one of the horns; or, if the funeral is that of a woman, her feet are placed by the animal's head. The men present salute the buffalo by placing their foreheads on its horns. The second buffalo is slain in like manner and then all those present cluster round the dead pair and mourn in couples as before. The couples keep continually separating and choosing new partners of their grief, and as each does so the younger of the two salutes the elder in the orthodox Tóda fashion, namely by bowing down before him and raising his feet one after the other so that they touch his (the younger's) forehead. 'At times the band of mourners would form a confused mass of struggling people, some crying forehead to forehead, others saluting head to foot, while others would be struggling through the mass to seek partners with whom to mourn.' While all this is going on, a near relative of the deceased gives a cloth to those who have married into his family and the latters' wives place it over the corpse.

Next the body is borne on the bier to the side of the pyre and there supplied with the various articles—food, ornaments, money and tobacco—necessary for its use in the other world. Then the pyre is lighted by a woman (fire being made by friction if the deceased was a man), the body is lifted and swung three times over it, the articles of value just presented to it are removed and a lock of its hair is cut off. The corpse is next placed finally on the pyre, with (if the deceased was a man) some imitation wooden buffalo horns, and is burnt to ashes, the Kótas who have attended to make music and carry off the flesh of the dead buffaloes redoubling their discordant noise while this is going on. Finally a piece of the skull is sought out from the ashes and, with the lock of hair, is wrapped up in one of the mantles usually worn and is preserved as a relic for use at the dry funeral. Those who attend Teivali funerals are held to be polluted until the next new moon and are subject to numerous social disabilities in consequence.

The 'dry funeral' may be held over the relics of more than one person, but Government allows only two buffaloes to be sacrificed on each occasion. The relics of each person are placed in a separate hut; the same mourning as at the green funeral, forehead to forehead, is practised; earth is again thrown over the remains; buffaloes are slain in the same manner; and the relics are brought and placed near their heads, just as before. Then the men dance in their characteristically solemn, clumsy fashion round the funeral hut, carrying round with them a long pole of a special kind decorated with cowrie-shells; food is distributed; and most of those present return home.

Near relatives, however, remain until the evening, and then a hole is dug near the entrance of the *ázáram*, or circle of stones already mentioned, and the remains of the dead and certain objects to be burnt with them (food, household utensils, etc.) are brought and placed near by amidst frantic wailing. A fire is lighted within the circle and the remains are burnt, all those present mourning and crying, forehead to forehead, and the Kótas playing special funeral music. The ashes are swept into the hole already mentioned and covered with a stone, a bell is rung three times round the spot, a new pot is broken on the stone, and the rites are over.

During both green and dry funerals, laments in honour of the dead are sometimes sung or said, and some of the Tódas have great reputations as composers of these. Still-born infants are buried without ceremonies of any kind and in the case of children under two years of age both funerals are held on the same day.

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The souls of dead Tódas and of the buffaloes slain at their funerals go to the Ámnordr already mentioned. This lies to the west and is below this world, but is lighted by the same sun, each region being dark during the time the other is light. The people of Amnordr live in much the same way as mortal Tódas, having buffaloes and dairies, but as they walk about they wear down their legs, and when they have worn them down as far as the knees, On, the ruler of Amnordr already referred to, sends them back to this world as other men. The dead travel to Amnordr by well-defined routes, which are different for the Tarthars and the Teivalis. They do not start until after the dry funeral and pass westwards towards the Kundahs across the Avalanche stream. At this, the paths of the two subdivisions diverge, but meet again beyond Avalanche hill at a certain stone. When the dead reach this they knock it and so lose all their love of this world; and further on is another stone, knocking on which rids them of all their diseases so that they are sound and vigorous when they reach Amnordr. Near Sispára they come to a river crossed by a bridge of thread, and those who have been bad Tódas in this life fall from the bridge into the river among swarms of leeches. All, however, reach Amnordr at last. No Tóda may on any account mention the name of a dead ancestor, and indeed the names of all the dead are taboo.

Each clan observes a certain day of the week as a kind of Sabbath sacred to the mand and another as sacred to the dairy, and on these certain actions are forbidden. Women, for example, may not leave the mand, nor may money pass out of it. These prohibitions are often jesuitically evaded, women who wish to leave quitting the mand that day before sunrise, returning to it at dawn, doing their house-work and then departing. Their absence at dawn is supposed to render them ceremonially absent during the day. Similarly money required on a sacred day may be buried near at hand the day before and employed on the morrow without transgressing the law.

The Tódas are slowly increasing in numbers, and the excess of males over females which has been always so noticeable among them is gradually declining. In the margin are given the figures for the last three censuses. In 1901 special precautions were taken to ensure accuracy, a separate enumeration of the tribe being taken in advance of the general census and before they had

		Total.	Males to every 100 females.
1881	...	675	130·4
1891	...	736	135·9
1901	...	805	127·4

scattered, as usual in the early part of the year, to the distant grazing-grounds on the Kundahs. There are two small mands in the Wynaad, between Gúdalúr and Dévála. The houses in these are of the ordinary Wynaad pattern. The Tódas in them say that their ancestors went to the lower country with the Nelliálam Arasu and served as guards to the gates of his fort. They are still given an annual dole of grain by the Arasu in recompense for the past services of their forebears.

The slow growth of the tribe in the past was undoubtedly largely due to the practice of female infanticide. Girl babies seem to have been systematically put out of the way, some accounts say by placing them at the entrance of the buffalo-pens and leaving them to be trampled to death when the herd was released in the morning. This practice appears to have been brought to the notice of Mr. Sullivan in 1820, very soon after his first arrival on the hills, and he induced the Tódas to agree to abandon it; but in 1856 the then Collector reported that it was again prevalent and applied for sanction to grant a bonus on girl babies produced before him. Mr. Rivers believes that it is even now practised to some extent. In later years, the immorality for which the Tóda women residing near the hill-stations are notorious has also probably had some effect on their fertility.

Tóda children are often married when only two or three years of age. The most suitable match for a boy is the daughter of his maternal uncle (the usual Dravidian rule, known elsewhere as *ménarikam*) or of his paternal aunt. Betrothals are ratified by repeated periodical presents of cloths and the girl remains with her own people until she is fifteen or sixteen. Shortly before she arrives at puberty a man of some clan other than her own is invited to the mand and sleeps a night with her. It is a lasting disgrace to her if this is not done before she attains maturity. Engagements may be broken even at the last moment on payment of certain specified fines.

Polyandry (nearly always of the 'fraternal' type) is the rule, and in addition to her husbands a woman may also have recognized lovers. The Tarthars and Teivalis, as has already been said, may not intermarry, but a woman of either division may accept a man from the other as her lover, though the children of such unions differ from those born in orthodox wedlock in belonging to the division of the mother, and not that of the father. Members of the same clan never intermarry.

Though the decay of infanticide has increased the proportion of the women to the men, polyandry shows few signs of dying

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out. It is often actually associated with polygamy, two brothers having two wives in common. Probably in time this will result in each of such brothers coming to regard one of the two women as his own, and from thence there is but a small step to monogamy.

The marriage tie has become very loose, wives being constantly transferred from one husband (or set of husbands) to another on payment of a certain number of buffaloes fixed by a pancháyat. In one case quoted by Mr. Rivers a woman was thus transferred no less than five times. It has even become common for a man who takes a fancy to another's wife to endeavour to bribe the pancháyat to decide that she must go to him. Disputes have naturally resulted and Government have decided that unmarried Tódas willing to sign the declaration prescribed in the Marriage Act III of 1872 may contract valid marriages governed by the usual law and exempt from the operation of such an unnatural custom.

A man may divorce his wife if she is a fool or if she will not work; but not for adultery, which is hardly regarded as wrong-doing. Adultery with natives outside the caste is traditionally supposed to be common in the mands which immediately adjoin the towns, but it is only fair to say that very few Tóda children show any signs of mixed parentage.

Descent of property among the Tódas is in the male line, a person's father being held to be the man who presented his mother with the bow and arrow in the seventh month of her pregnancy in the manner already described. Adoption is not practised. Daughters inherit nothing. A headman (monigar) is responsible for the assessment due to Government, but he is less important, socially, than the head of the tribal pancháyat.

The Tódas play but few games. In one of them one boy has to try to squeeze through a narrow tunnel made of two upright stones with another laid horizontally upon them before his opponent, starting from some distance off, can reach him and touch his feet. A game for men consists in trying to lift to the shoulder a large circular stone. Near many mands the stones formerly used in this pastime may be seen, and as few Tódas can now do more than just lift them off the ground the inference follows that the tribe has much degenerated in physical strength. Tóda dancing is of the simplest description, the men merely joining arms in a circle and moving round with a sort of hop to the accompaniment of shouts of há-há-hóh.

The language of the tribe is undoubtedly Dravidian, and the best judges have considered it to be more nearly allied to Tamil than to any other Dravidian tongue. This fact throws some light on the two difficult questions: Who are the Tódas? How do they come to be living on the Nilgiris? No answer to these is afforded by the ancient records of the tribe, for they have none; nor by their traditions, for these, as has been seen, declare that the first Tóda was miraculously created on the Kundahs. Mr. Rivers considers that the similarity of the customs of the Tódas with those of Malabar points to their having migrated from that part of the country. For polyandry still survives in Malabar; the *sambandham* form of marriage there has points of resemblance to the custom by which Tóda women have recognized lovers; in both areas the giving of a cloth is an essential part of the marriage ceremony, new cloths are placed on the corpse at funerals, and certain wedding ceremonies are performed at the obsequies of a girl who has died unmarried. Again, the pole decked with cowries with which the Tódas dance at their funerals should, they aver, be procured from the Kurumbas from Malabar, where alone suitable kinds grow; and perhaps the belief that the souls of the dead travel westwards enshrines some tradition of the original home of the tribe. Moreover Malayálam and Tamil are nearly allied and perhaps further research would show that it is with the former rather than the latter that the Tóda tongue is most nearly connected; Tóda diviners, as has been seen, are declared to speak Malayálam when they are in their frenzies; and such statistics of physical measurements as are available reveal a certain resemblance between the Tódas and the Náyars and Nambúdris of Malabar.

If, however, the Tódas came from Malabar it must have been at a very remote period, as their general manner of life is now wholly different from that of any Malabar caste.

Irulas.

Of the people of the plateau there remain to be considered the Irulas and the Kurumbas, two jungle-tribes which are also found in several other districts.

The name Irula is supposed to be derived from the Tamil *irul*, 'darkness', which may refer either to the gloomy jungles in which they live or to their very swarthy complexions. The tribe lives chiefly on the eastern lower slopes in rude hamlets called *mottas* formed of huts made of plaited bamboo plastered over with mud. They cultivate patches of dry grains (ragi, sámai, tenai, dhall, maize and castor) and grow many plantains and some jack, lime, and other fruit trees. In some places (round about Arakód, for example) they do not plough the land, but carry on shifting

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cultivation in patches of jungle which they fell and burn. They also earn something by collecting forest produce, such as gums, dyes, etc. They have few dealings with the people of the plateau itself, but frequently travel down to the plains (especially to the Méttupálaiyam market) to dispose of their produce. They keep cows and, like the Badagas and Tódas, prohibit their women from having anything to do with the milk. They pay no *gúdu* to the Tódas. They have a headman called the *pattakáran* and a deputy styled *kólkáran* who preside at pancháyats. They are divided into seven exogamous groups, the origin of which is not clearly known. The Irulas on the slopes of the Bhaváni valley are sometimes called Múddumárs and those round about Masinigudi are known as Kasubas or Kasuvas. All of them speak a corrupt form of Tamil.

They are small in stature, very dark-skinned (though sometimes much fairer individuals are met with), broad-nosed, and so like the Kurumbas that they can with difficulty be told apart. The men sometimes shave their heads in the Tamil fashion and wear a kudumi, or top-knot. The women are generally tattooed on the forehead, wear their upper cloths stretched straight across their breasts and passed under their arms, like the Badaga women, and their characteristic ornaments are a series of brass bangles on the forearms and a necklace made up of many strings of beads roughly twisted into a regular rope. The Irulas are as fond of dancing as the other people of the hills and have their own musicians.

Early accounts of the tribe (such as Captain Harkness', written in 1832) represent them as sunk in poverty, dirt and wretchedness and subsisting from hand to mouth by primitive shifting cultivation and the collection of jungle produce. So poor were they that infanticide was common (the mothers being declared to bury their infants alive) and so wild were their habits that fabulous stories of their relations with the animals of the forests were recounted by other tribes—one of these (quoted by Buchanan) declaring that when an Irula woman was too busy to look after her babies she entrusted them to the care of the nearest tiger.

Nowadays work on the numerous tea and coffee plantations of the hills has brought them regular wages and raised their standard of comfort, and they are far less wild (and so less interesting) than they were.

They worship Vishnu and are the priests at his rude shrine (p. 340) on Rangasvámi Peak. They eat meat (though not beef) and any game they can catch, pig not excepted. A youth

has a vested right to the hand of his paternal aunt's daughter and can claim her before the pancháyat. His mother usually makes the proposal for her hand, and if it is accepted she goes with a party (which does not include the bridegroom) to the girl's house with presents of food and the bride-price. There they are feasted and that night the bride is handed over with due and quaint ceremony to her future husband's people. Marriage generally occurs after puberty; the right to divorce is mutual; widows may remarry.

When an Irula dies, two Kurumbas who are hereditarily attached to his village come there and one of them shaves the head of the other. The latter is fed and presented with a cloth, which he wraps round his shorn head. This odd ceremonial is supposed in some way or other to bring good luck to the departed.[1] Until the time fixed for the funeral, the corpse is kept inside the house, while the relations dance outside to an Irula band. A funeral car something like that used by the Badagas is made and afterwards demolished, and the corpse is carried off to the cemetery. Each village has its own cemetery and in this the dead are buried fully dressed and in a sitting posture with the legs crossed in tailor fashion. A lamp, knife and hatchet are placed beside them and then the grave is filled in and its position marked with a stone. As already mentioned (p. 101) the Irulas and the Kurumbas used at one time to place a water-worn stone in some cromlech every time one of their number died, and in some places they still place them in a shed at the cemetery, big ones being used in the case of grown-up people and little ones for children. Sometimes a family has its own family grave which is opened and used whenever any of the members die. A simple annual memorial service is held at the cemetery, food being taken there, a lamp lit and some púja performed.

Kurumbas.

The Kurumbas, Kurubas or Kurumas of the district seem to be of at least three classes; namely, the Kurumbas proper who live in hamlets on the plateau; the Úr Kurumbas round Nelliálam; and the Jén Kurumbas or Shóla Náyakas who are numerous in the Wynaad and especially on the Mudumalai side of it.

A powerful race called Kurumbas or Pallavas, about whom much has been conjectured but little is known, once held sway over much of South India but was overthrown about the ninth century A.D. by the Chóla dynasty of Tanjore. It is usually

[1] Mr. Thurston in *Madras Museum Bulletin*, Vol. II, No. 1. Other information about the Irulas is contained in Breeks' and Shortt's books.

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supposed that the scattered communities of Kurumbas or Kurubas which are found in many parts of this Presidency are the descendants of refugees belonging to this race who fled to the wilds from their conquerors, but there is no real evidence that this is so.

Except the Úr division, the Nilgiri Kurumbas are generally shy people who flee at the sight of a European, and their ways stand in much need of further investigation.[1]

The Kurumbas of the plateau reside in rude hamlets known as *mottas* or *kambais* which are usually placed on or near the slopes of the hills and consist of some half a dozen huts made of wattle and mud and thatched with grass. This word *kambai* forms part of the names of several villages on the edges of the plateau (Kulakambai, Manjakambai and others) and apparently denotes that these were once Kurumba settlements.

The people of the tribe are short, slightly built and dark-complexioned, and resemble the Irulas closely in general appearance. The men are noticeable from their wiry and curly hair, which sticks up all round their heads like a black halo, and the women from their one garment, a cloth passed straight across the breasts, tied under the arms and reaching down to their knees. These Kurumbas speak a dialect which has been described as savouring of Canarese, but which Dr. Caldwell considers to be a rude Tamil. They subsist in much the same way as the Irulas and, like them, are far better off than they used to be. They often assist the Kótas to make music at Tóda and Badaga ceremonies (they pay no *gúdu* to the Tódas) and they also trade largely on the extraordinary dread of their supposed magical powers which possesses the Tódas and the Badagas—the latter especially.

Each Badaga village or group of villages has its own Kurumbas attached to it, and these are invited at the beginning of every cultivation season to officiate at the ceremonies considered essential to secure good crops and are paid to turn the first sod and sow the first seeds. Similarly when the harvest is ripe they are invited to reap the first sheaf and are again paid for their services. Specific instances of these ceremonies are given in the account of Mélúr in Chapter XV. If cattle-disease or blight among the crops appear, the Kurumbas are again consulted and begged to remove the scourge. The Badagas used to stand in even more mortal terror of them than they do now; and Metz declares that

[1] Breeks and Shortt may be consulted and Mr. Thurston's *Ethnographic Notes* contains material.

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if a single Badaga met a Kurumba in a lonely, jungly place he 'not unfrequently' died of sheer fright. Now and again when a string of misfortunes overtook the Tódas and Badagas, and the Kurumbas did not alleviate them, the men of these two castes fell upon the Kurumbas and murdered a batch of them. Instances of this kind occurred in 1824, 1835 (when as many as 58 of them were massacred), 1875, 1882, 1891 and as recently as 1900. These cases have always proved most difficult to detect, as the other tribes firmly believe that there is no other way of counteracting the Kurumbas' evil magic and combine to screen the murderers.

Kurumba marriage ceremonies are of the simplest. Apparently a youth merely selects a girl as his bride and gives a feast to the relations on both sides to announce the fact.

The funeral rites of the tribe rudely resemble those of the Badagas, the dying man being made to swallow a Víraráya fanam, and a funeral car being made round which music and dancing take place. The body is generally burnt and the ashes left to the mercy of the jackals and the winds of heaven. In some places it is buried and a water-worn stone is brought and set up in a small cromlech close by the cemetery. At long intervals a memorial ceremony similar to the manavalai of the Badagas is held.

Kurumba religious ideas are apparently of the vaguest. They call themselves Saivites, but seem to have no regular shrines or very definite deities.

The Úr ('village') Kurumbas who occur in small numbers near Nelliálam are, as their name implies, a civilized community. They speak Canarese and are immigrants from Mysore, where numbers more of them (whose ways have often been described) reside.

The Jén (or Jénu) Kurumbas are so called by other castes on account of their skill in collecting honey (*jēnu*) from wild bees' nests on cliffs and precipices. They clamber down at night with the help of rattan ladders. They themselves, however, object to this name and call themselves Jénu Koyyó Shóla Náyakas ('honey-cutting lords of the woods') or Shóla Náyakas for short.[1]

They speak Canarese and live in the depths of the jungles in bamboo huts thatched with grass. They have a definite caste organization, a headman called the ejumán, assisted by a pancháyat, wielding the usual authority in domestic and caste matters.

[1] M. Louis Lapicque, in a note in the Comptes rendus des Séances de la Société de Biologie, differentiates Shóla Náyakas from Kurumbas; but Mr. Thurston's enquiries and those made for the purposes of this present volume go to show that he is in error in doing so.

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When a girl attains puberty she is made to live in a new hut built by her elder brother for the occasion and is there visited by her relations. After ten days she has a bath and is allowed to return home. A youth has a claim to the hand of his paternal aunt's daughter. Marriage occurs after puberty and the match is made by the boy's parents. Preliminary palavers having been held, the girl's mother provides a táli (or marriage badge) and a new cloth for the boy and the latter's parents contribute a new cloth and brass rings and bangles for the girl. The two parties eventually meet and the bride's mother ties the táli, after which a dinner is given whereat the happy couple eat out of the same cup, helping each other in turn to a handful of the fare provided. They are next shut up in a hut together and the ceremony is over. Widow remarriage is allowed, but in such cases it is the woman's parents, and not the man's, who seek out a suitable match. No ceremonies are performed, the couple merely going to live together as soon as their parents have arranged matters. Only the men can claim a divorce—not the women.

Very old people are cremated and the rest are buried in a sitting posture. The grave is marked with a stone. On the seventh day afterwards the deceased's family go into the jungle and the eldest man among them plucks a piece of grass and makes a hole and plants it. Next he takes a new bamboo pot, fills it with water and adds, with his first finger, two drops of castor oil. If these remain apart, it is a bad omen and no more is done; but if they run together the oil and water are poured over the grass and the new pot is taken back and kept in the shrine of the god Billala. Whenever afterwards any of the relations pass the grave, they throw a little tobacco or betel and nut upon it to solace the dead, and for the first two rainy seasons they build a rude hut over it to shelter the departed from the wrath of the elements. The same observances are paid to the spot where any one has been cremated, except that no hut is built in the monsoons.

Three caste deities are worshipped; namely, Kallátha (a goddess) and Airu Billi and Kádu Billala, both of whom are gods who are supposed to have come to the Wynaad from Malabar. A ceremony in their honour, subscribed for by the caste in general, is held in April every year, a cock or two being sacrificed, much rice cooked and eaten by the celebrants, and a dance being held.

Like their more backward brethren on the Nilgiri plateau, the Jén Kurumbas are held to be great magicians, and stories are told of how they can summon wild elephants at will and reduce rocks to powder merely by scattering mystic herbs upon them.

Relations between the five tribes.

The mutual relations of the five tribes who inhabit the hills—the Badagas, Kótas, Tódas, Irulas and Kurumbas above referred to—require a few words by way of summary. The Badagas and Tódas have more to do with each other than the rest. The former are not only the agriculturists of the latter (paying them the yearly contribution of grain called *gúdu* which they also give the Kótas and Kurumbas) but are the intermediaries between them and the world beyond the Nilgiris; and the two regard themselves as more or less social equals. When a Tóda meets a Badaga headman or an aged Badaga with whom he is acquainted, he stands in front of him, bows his head slightly and says 'You have come.' The Badaga replies 'Blessing! Blessing!' and rests his hand on the top of the Tóda's head. Each of the *ti* dairies has attached to it a special Badaga whose duty is to supply it with the various articles required for the worship which are made by ordinary Hindus—such as the earthenware vessels used in the inner room and the garments of the pálol. A Badaga also sits on certain occasions on the Tóda pancháyat.

Both Badagas and Tódas regard the carrion-eating Kótas as their inferiors. When a Kóta meets a Tóda he raises both hands to his face and salutes from a distance, and a Tóda will not ordinarily sleep or take food in any of the seven Kóta villages. Both Badagas and Tódas avail themselves of the services of the Kótas as musicians, potters and smiths, each Kóta village supplying certain Tóda clans. The Kótas are, indeed, artisans to all the hill tribes. At Tóda green funerals they are expected to provide the cloak in which the corpse is wrapped, five to ten measures of sámai and a rupee or two; and at dry funerals another cloak, a few rupees towards the expenses, a bow and three arrows, a knife, a sieve and a basket. In return they get the bodies of the buffaloes which are slain at funerals or which die a natural death, and at Kóta funerals the Tódas supply a male buffalo calf and a measure of ghí. Once in a year, too, the Tódas go to the Kóta village with which they are connected, make a present of ghí and receive one of grain, these being offered and taken with much ceremonial.

The Kurumbas and Irulas live a far more exclusive life than the other three tribes and come but little in contact with them except in connection with their magical powers already referred to. When they meet a Tóda they bend forward and the Tóda places his hand on their heads. The Kurumbas supply the Tódas with the long pole used at the funeral dances and with the wooden posts at which the buffaloes are killed at these ceremonies.

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It remains to refer to two castes in the Wynaad—the Chetti landowners and their farm-labourers the Paniyans.

Chettis.

The former have now no connection whatever with the Chetti traders of the Tamil and Telugu country, but resemble in appearance the Náyars and Tíyans of Malabar, being fair-skinned and straight-featured, wearing their top-knots hanging over one side of their foreheads, and living in neat little houses after the Malabar pattern, made of woven bamboo tatties covered with smoothened earth decorated with patterns and figures of animals done in chunam, provided with wide pials and deep eaves, and surrounded by a trim, fenced fruit-garden.

Though they are all outwardly much alike, these Chettis are of two kinds which form two separate castes. The first of these, called the Mandádan Chettis, speak a corrupt Canarese, follow the Makkatáyam law of inheritance, and seem to have always been natives of the Wynaad; while the second, known as the Wynaadan Chettis, speak Malayálam, follow Marumakkatáyam, and say they are immigrants from the Coimbatore side. The two communities do not intermarry and their womenkind will not even mess together.

Mandádan Chettis.

'Mandádan' is supposed to be a corruption of Mahávalinádu, the traditional name still applied to the country between Nellakóttai and Tippakádu, in which these Chettis principally reside and over which the Válunnavars of Nambalakód once held sway. These Chettis recognize as many as eight different headmen who each have names and a definite order of precedence—the latter being accurately marked by the varying lengths of the periods of pollution observed when they die. They are supposed to be the descendants in the nearest direct line of the original ancestors of the caste and they are shown special respect on public occasions and settle domestic and caste disputes.

Marriages take place after puberty and are arranged through go-betweens called Madhyastas. When matters have been set in train the contracting parties meet and the boy's parents measure out a certain quantity of paddy and present it to the bride's people while the Madhyastas formally solicit the approval to the match of all the nearest relatives. The bride is bathed and dressed in a new cloth and the couple are then seated under a pandal. The priest of the Nambalakód temple comes with flowers, blesses the táli and hands it to the bridegroom, who ties it round the bride's neck. Sometimes the young man is made to work for the girl as Jacob did for Rachel, serving her father for a period (generally of from one to four years) the length of which is

settled by a pancháyat. In such cases the father-in-law pays the expenses of the wedding and sets up the young couple with a house and some land. Married women are not prohibited from conferring favours on their husbands' brothers, but adultery outside the caste is severely dealt with.

Adoption seems to be unknown. A widow may remarry. If she weds her deceased husband's brother, the only ceremony is a dinner after which the happy pair are formally seated on the same mat; but if she marries any one else a pandal and táli are provided.

Divorce is allowed to both parties and divorcées may remarry. In their cases, however, the wedding rites are much curtailed.

The dead are usually burnt; but those who have been killed by accidents or epidemics are buried. When any one is at death's door, he or she is made to swallow a little water from a vessel in which some rice and a gold coin have been placed. The body is bathed and dressed in a new cloth, sometimes music is played and a gun fired, and in all cases the deceased's family walk three times round the pyre before it is fired by the chief mourner. When the period of pollution is over, holy water is fetched from the Nambalakód temple and sprinkled all about the house.

These Chettis are Saivites and worship the Bétaráyasvámi of Nambalakód, the Airu Billi of the Kurumbas and one or two other minor gods, and certain deified ancestors. These minor gods have no regular shrines, but huts provided with platforms for them to sit upon, in which lamps are lit in the evenings, are built for them about the fields and jungles.

Chetti women are often handsome. In the house they wear only a waist-cloth, but they put on an upper cloth when they venture abroad. They distend the lobes of their ears, and for the first few years after marriage wear in them circular gold ornaments somewhat resembling those affected by the Náyar ladies. After that period they substitute a strip of rolled-up palm-leaf. They have an odd custom of wearing a big chignon made up of plaits of their own hair cut off at intervals in their girlhood.

Wynaadan Chettis.

The Wynaadan Chettis say they were originally Vellálas from Coimbatore, followed Makkatáyam, spoke Tamil and wore the Tamil top-knot. In proof of this they point out that at their weddings they still follow certain Tamil customs, the bridegroom wearing a turban and a red cloth with a silver girdle over it and being shaved, and the women putting on petticoats and nose-rings.

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They have headmen called kolapallis, subordinate to whom are mantiris, but these are liable to be overruled by a nád council. No wedding may take place without the headman's leave.

Two forms of marriage are recognized. In one the couple exchange garlands after the Tamil fashion and the father (a relic of the Makkatáyam system) conducts the ceremony. Preliminaries are arranged by go-betweens and the chief of the numerous rites is the placing of a bracelet on the girl's upper arm under a pandal before the priest and the assembled relatives.

The other form is simpler. The bridegroom goes to the girl's house with some men friends and after a dinner there a go-between puts on the bangle.

Before marriages a táli-kettu ceremony resembling that of the Náyars is often gone through, all the girls of a family who are of marriageable age having tális tied round their necks on the same day by a maternal uncle.

Married women are allowed intimacy with their husbands' brothers. Widows are permitted to marry again. The dead are usually burnt, but (as with the Mandádan Chettis) those who have met their deaths by accidents and epidemics are buried. Water from a vessel containing rice and a gold coin is poured, as before, into the dying person's mouth. The other ceremonies are not particularly noteworthy. Should the spirit of the dead disturb the dreams of the relatives, a hut for it is built under an astrologer's directions close to the house, and in this lights are lit morning and evening and periodical offerings of food are made.

The Wynaadan Chettis reverence the deities in the Ganapati, Mahámári and Kalimalai Tambirán temples near Sultan's Battery, the Airu Billi already mentioned, and one or two others. The women wear in their distended ear-lobes the gold discs which are so characteristic of the Náyars, and many necklaces. They use two white cloths, tying one round the waist and another across their breasts.

Paniyans.

The Paniyans are a short, dark-skinned tribe with broad noses and such curly hair that they are popularly (but erroneously) supposed to be of African descent. They speak a corrupt patois of Malayálam, live in dirty little huts made of bamboo wattle plastered with mud and thatched with grass, and follow the Makkatáyam law of inheritance. Each family is attached to some Chetti household and works on its fields, and in past times they were little better than agrestic slaves. The advent of the coffee-planter did much to liberate them, but they are still usually poor, unkempt and unclean. They are clever at netting (and poisoning

fish, and daring at spearing tigers in the manner described on p. 30. They have hereditary caste headmen (called Kúttáns or Janmis) at all the larger centres, whose consent to all marriages is necessary.

When a youth is betrothed, he is expected to bring his fiancée a bundle of firewood at frequent intervals until the wedding-day. Weddings take place in the bride's house and the Kúttán officiates. He invests the girl with a cloth with four annas knotted in the corner and a bead necklace, both provided by the bridegroom, throws water at the couple's feet and sprinkles some round them to avert the evil eye. The bride-price being duly paid, the girl's father hands her over and the Kúttán then solemnly adjures the young husband neither to starve nor bully her and, turning to the father, promises that should either occur he will get the girl back and return her to her parents. Relations between a married woman and her husband's brothers and cousins are loose. Widow re-marriage is allowed.

Young folk are buried and the rest cremated. Graves are dug in an unusual way :[1] at the bottom of a trench some five feet deep and running due north and south a chamber big enough for the body is excavated in the western wall and the body, wrapped in a mat, is laid therein. A little cooked rice for the spirit is added and the trench filled in. For seven days afterwards the deceased's relations abjure meat and fish, and a little rice gruel is placed at some distance from this grave by the Kúttán, who claps his hands as a signal to the evil spirits round about to come and be fed. Mourning ceremonies are held in the month of Magaram (January-February), when those who have lost relatives during the year cook their food in a special shed apart from the village and eat neither flesh nor fish. On the last day of the month they assemble at the shed and the Kúttán or Janmi walks round it three times, holding in his crossed arms two winnowing sieves containing paddy which he eventually deposits in the middle of it. Then a kómáran, a kind of professional soothsayer, appears with a new cloth about his brows, his body smeared with rice-flour and ghí, and bells on his legs to scare away the evil spirits, and advancing with short steps and rolling eyes, staggers to and fro, sawing the air with two small sticks, and gradually works himself into a state of frenzy which ends in his collapsing on the ground. The assembled mourners then question him as to the reason why their

[1] Mr. Colin Mackenzie's account quoted in *Madras Museum Bulletin*, Vol. II, No. 1, p. 22.

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relations were taken from them and his disjointed gasps are accepted as a divine answer.

He eventually recovers, and taking the bells off his legs holds them in his hands and to the accompaniment of their jingling chants a funeral lament of which no man knows the meaning and which lasts till dawn.

The Paniyans' chief goddess is Káttu Bhagavati or 'Bhagavati of the woods.' Shrines in her honour are to be found at most centres of the caste and contain no image, but a box in which is kept the clothing and jewels presented to her by the devout. An annual ceremony lasting a week is held in her honour at which the kómáran and a kind of priest called the nolambukáran take the chief parts. The former dresses in the goddess' clothing and the divine afflatus descends upon him and he prophesies both good and evil.

The men's dress consists of a waist-cloth. As a defence against rain they wear an odd covering 'like an inverted coal-scoop' made of split reeds woven together with arrowroot leaves. The women wear one cloth which they throw over the shoulders and knot across the breast, much base-metal jewellery, and sometimes in their distended ear-lobes a big wax disc set all round with the bright, red and black seeds of the *Abrus precatorius* which the goldsmiths of the plains use as weights.

CHAPTER IV.

AGRICULTURE.

CEREAL CROPS—Statistics—Cultivation on the plateau—Soils—Methods—Chief crops—Cultivation in the Wynaad—Soils—Methods; on dry land—On wet land. SPECIAL PRODUCTS—Coffee—Its first introduction—Subsequent vicissitudes—Cultivation—Diseases—Processes of manufacture—Tea—Its first introduction—And subsequent extension—Processes of manufacture—Cinchona—Its introduction—Government plantations begun—The first febrifuge made—Changes in administration—Private planting of cinchona—Work on the Government plantations at present—Maintenance of the supply of bark—The species of cinchona grown—Harvesting of the bark—Manufacture of quinine—Rubber—Its introduction—Extent now planted—Harvesting—Rhea fibre. FRUIT-TREES, ETC.—Apples—Pears—Medlars—Quinces—Peaches—Nectarines—Apricots—Plums—Persimmon—Cherries—Currants—Gooseberries—Raspberries—Strawberries—Mulberries—Figs—Vines—Guavas—Oranges and lemons—Cherimoyer—Nuts—Bee-keeping. GOVERNMENT FARMS AND GARDENS—The Kéti farm—The Government Gardens, Ootacamund—The Kalhatti branch garden—The Coonoor branch garden—Sim's Park, Coonoor—The Barliyár Garden—The present Government Gardens and Parks.

CHAP. IV. CEREAL CROPS.

AGRICULTURE in the district divides itself naturally into two classes; namely, the cultivation of food-crops carried out by the natives and the growth by Europeans of special products such as coffee, tea, cinchona, rubber, fruit trees, etc. These classes will be separately treated and a few words then added regarding the farms and gardens which have been, or still are, maintained by Government.

It may be noted in parenthesis that there is no artificial irrigation in any part of the district and that the land is all ryotwari, there being neither zamindaris nor inams in the Nilgiris.

Statistics.

The following statistics show at a glance the general agricultural position in the district:—

Taluk.	Percentage of the area shown in the village accounts which is			
	Forest and other area not available for cultivation.	Cultivable waste other than fallow.	Current fallows.	Net area cropped.
Coonoor	42·8	7·2	29·6	20·4
Ootacamund	80·4	1·3	10·7	7·6
Gúdalúr	38·6	22·3	29·5	9·6
District total ...	58·8	8·9	20·9	11·4

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CEREAL CROPS.

Crops.	Percentage of area under each crop to total area cropped.			
	Coonoor.	Ootacamund.	Gúdalúr.	District total.
Cereals and pulses—				
Sámai	14·7	4·3	2·3	8·4
Rice	...	...	33·1	7·8
Korali	11·9	7·8	...	7·7
Rági	1·5	7·1	4·4	4·0
Barley	5·4	3·4	...	3·5
Wheat	1·7	2·9	...	1·7
Others	1·2	20·0	..	7·0
Oil-seeds	...	0·7	...	0·2
Condiments and spices	0·3	0·2	0·1	0·2
Drugs and narcotics—				
Coffee	44·6	18·1	43·9	36·0
Tea	7·7	12·8	13·1	10·6
Cinchona	1·1	10·9	2·6	4·6
Others	...	...	0·1	...
Orchards and garden produce—				
Potatoes	4·8	3·2	...	3·2
Others	0·4	0·7	0·4	0·5
Miscellaneous non-food crops—				
Blue gum	4·5	7·9	...	4·5
Others	0·2	...	...	0·1

From these it will be seen that in Coonoor taluk only half the area shown in the village accounts is cropped or under fallows, while seven per cent. of it is culturable but still unoccupied and the remainder is forest or other land not available for cultivation; that in Ootacamund less than a fifth of the total area is cropped or fallow and hardly any unoccupied land remains, since four-fifths of the taluk is forest or other land not available for cultivation; and that in Gúdalúr the forests and the occupied land each make up some two-fifths of the total area while as much as one-fifth is culturable but not occupied.

Again, in Coonoor, of the total area cropped, more than half is grown with coffee, tea and cinchona, while the chief cereals are the two millets called sámai (*Panicum miliare*) and korali (*Setaria glauca*), which are often sown together in the same field; in Ootacamund the area under plantation products is proportionately smaller, while korali and rági (*Eleusine coracana*) are the principal food-crops; and in Gúdalúr the percentage under coffee, tea, etc., is higher than in either of the other taluks, but the chief (indeed almost the only) cereal is paddy. The area shown under plantations in this last taluk, however, includes a good many estates which have now been practically abandoned. In both Coonoor and Ootacamund the areas planted with blue gum trees for firewood are considerable.

On the whole, little more than one-tenth of the district area is cropped each year and of this less than half is cultivated with food-crops and more than half with coffee, tea and cinchona. Consequently large quantities of grain have to be imported from Coimbatore and Mysore, and it has been calculated that the district produces food for only four months' consumption and that the supply for the other eight months is imported.

Cultivation on the plateau.

Regarding the native methods of cultivating the various cereals there is little to be said. Those in vogue on the plateau naturally differ from those in the Wynaad, as the seasons, crops and agricultural castes in the two areas are quite dissimilar.

On the plateau none but 'dry' crops are grown, and there the Badaga and Kóta agriculture is careful only in the fields immediately adjoining the villages, which are known as hálihola. In these, a fair amount of cattle manure is used; stone walling is often practised; and the women do their best to keep down the weeds; and in them are grown the more valuable cereals (such as barley, wheat and rági) and garden crops like potatoes, onions, mustard, garlic and the red-flowered amaranth, known as Prince's feather in England. This hálihola is the only land on which two crops are ever cultivated, barley and wheat being raised between May and September and August and December and potatoes between April and September and August and January. The land called shólahola, which occupies the site of woodlands which have been felled, is also more than usually productive and is treated with some care. But the káduhola, or ordinary land of the plateau, is cultivated in the most casual manner with korali and sámai and is neither properly ploughed, regularly (if ever) manured, nor sufficiently weeded, and consequently produces the most wretched crops. It suffers most from the ryots' neglect to prevent the top-soil from being scoured away during each monsoon: it is hardly ever terraced and rarely even protected with catch-drains; and consequently in most places the top-soil has gone down to Tanjore district by way of the Cauvery river and all that is left is the stiff, infertile, red and yellow clay which forms the subsoil of the greater part of the plateau.

Soils.

The soils of this tract were not classified at the last settlement and it is not possible to give statistics of them. Four varieties are usually recognized. These are (*a*) the black, which is a rich loam and the best of all (the black peaty earth of the bogs, however, is useless until well-worked and manured); (*b*) the brown, a clay loam which comes second in productiveness but often lies on a

CHAP. IV. CEREAL CROPS.

lateritic subsoil which is so dry and hungry that manure is apt to be washed down below the reach of plants before it can be utilized; (c) the yellow, a stiff clay which requires draining and is fit for little but grass or timber plantations until it has been deeply worked and manured; and (d) the red soil, which is not so stiff as the last but is equally hungry and unproductive. The poorness of these soils as a class may be gathered from the fact that nearly four-fifths of the occupied area in the district is assessed at As. 10 and less per acre. Many of them will not stand continuous cropping, and this is the explanation of the large areas of fallows which appear in the statistics above. In all of them the proportion of lime is far below normal, and manures containing this constituent are always useful. One of the best European authorities on the subject gives as much as a ton of lime per acre to all his grain crops and another declares this manure to be 'the beginning, the middle and the end of agriculture' on the hills; but until the railway reaches Ootacamund it will continue to be a most expensive substance to import.

Methods.

Káduhola land is ploughed in the ordinary way and not deep enough, and the seed is sown broadcast (not drilled) and too thickly. Thereafter the crop is practically left to the women to weed and harvest, the men earning daily wages as coolies in the towns or on the estates or public roads. Harvesting is done with a sickle and the grain is trodden out by cattle, which are driven round and round over the straw in much the usual manner. The little circular threshing-floors where this is done are dotted all about the hill-sides, and the men urge the cattle round with a quaint cry resembling the first five notes in the ordinary musical scale.

Chief crops.

Of the crops chiefly raised on the plateau the sámai and rági resemble those of the plains. Korali is less commonly known. It is a tiny millet, the grain of which is about one-twentieth the size of wheat, is cultivated on every description of soil, and does well even on the poorest land and in the most exposed situations.

The wheat chiefly grown is a bearded kind the husk of which adheres so closely that it can only be removed by pounding.[1] The Badagas consider this characteristic a great merit, as it protects the grain from the many weevils which swarm on the hills. Another kind is called by the Badagas 'the naked wheat' because its husk comes off so readily. This is a European variety and was introduced by Mr. J. Sullivan in the course of his

[1] This and many of the facts below are taken from a report written in 1875 by Mr. W. R. Robertson, Superintendent of Government Farms.

endeavours to improve Badaga cultivation; but, whether from bad farming, poor soil, hybridization with the indigenous sorts or want of care to keep it separate from these latter, it has greatly deteriorated. Neither kind produces flour good enough to make bread or pastry for Europeans.

Of barley several varieties are raised. The favourite among the Badagas is a six-rowed, naked kind called *akki gánji*; and two other six-rowed sorts are the *Badaga gánji*, which is supposed to be the indigenous barley, and *Dorai* ('gentleman's') *gánji*, which is said to be descended from some seed imported by Mr. Sullivan but is now inferior to the indigenous kind. Mr. Honeywell, who started in 1857 the brewery at Aravankád referred to on p. 289 below, imported the seed of several good sorts of Scotch and English malting barleys and distributed them to the Badagas round Aravankád, promising to buy the crop raised from them at prices much above the market rates for the local barley. But after three generations the produce of these quickly deteriorated owing to the Badagas giving it insufficient manure and casual tillage and not even troubling to keep it separate from their own inferior kinds, and it was found necessary continually to import fresh seed. The average outturn of Badaga barley is only about ten bushels an acre, whereas in England fifty or sixty bushels an acre would be nothing unusual. There is always a ready market for the grain, the local breweries buying it at from Rs. 1-12-0 to Rs. 2 per bushel. Mr. George Oakes has obtained better results at his place Downham, near Kalhatti, from English (Hallett's pedigree), Australian (Best Malting) and Rewári seed, the English producing fifteen bushels an acre which sold for Rs. 3 per bushel.

Potatoes are much exported to Ceylon, the Straits and Burma, are beginning to be appreciated by native consumers, and are consequently a paying crop (a good field fetches Rs. 250 per acre as it stands) and are grown wherever the soil is suitable. But in size and flavour they are much inferior to English varieties owing chiefly to the fact that the same kinds are put down in the same land year after year until the yield diminishes to the point where it ceases to be remunerative and disease (which the Badaga never attempts to check) is encouraged. Government and private individuals have made several efforts to introduce better varieties; but little or no care has been taken by the natives to reserve or keep separate a stock of this superior seed, and they have generally sold the whole crop and returned to their own inferior varieties. Potatoes, however, are more carefully cultivated than most crops, the land being dug with a fork,

CHAP. IV. CEREAL CROPS.

manuring and weeding being attended to, and the rows being ridged by hand with a mamuti. Porcupines do much damage among them and they are particularly liable to be stolen. The pay of watchers is consequently an appreciable item in the expenses of cultivation and one European experimenter with pedigree kinds who neglected this precaution discovered when he came to lift his crop that thieves had stolen most of it by scraping out the potatoes with their hands, leaving only the bines standing. Potatoes do well in the black peaty soils if these are drained, broken up deeply and adequately manured; but the best are raised in the neighbourhood of Kalhatti, where the soil is a reddish-brown loam, the rainfall moderate and frosts rare.

Oats are a good crop to follow early potatoes, but the Badagas grow very little of them. Mr. George Oakes found the best variety for hay was the Patna kind and for grain either Australian or New Zealand. The expenses were: sowing, Rs. 3 per acre; lime, Rs. 10; cutting, drying and stacking for hay, Rs. 12; seed (three bushels at Rs. 3) Rs. 9; total, Rs. 34. The yield was 1½ tons of hay per acre, value Rs. 60, which gives a profit of Rs. 26 per acre; or sixteen bushels of grain, value Rs. 48, which makes a surplus of Rs. 14.

Amaranth is only grown round about the villages, in good soil and sheltered situations, and is raised for home consumption and not for sale. The seed, a small white grain about one-fortieth the size of wheat, is made into flour and the leaves are cooked as a vegetable.

English market-garden crops of very many kinds (such as carrots, turnips, tomatoes, parsnips, cabbages, vegetable marrows, cauliflowers, beet-root, radishes, lettuces, rhubarb, peas, French and broad beans, cucumbers, celery, etc.) are largely raised by Badagas and immigrant Canarese, and the towns are well supplied with them; but the ryots have not yet succeeded in competing with the more businesslike and enterprising Bangalore gardeners in the large market for these commodities which exists among Europeans in the plains. The completion of the railway to Ootacamund may assist them.

Cultivation in the Wynaad.

In the Wynaad, as the figures already given show, paddy is by far the commonest crop and the only others raised on any appreciable extent of land are rági and sámai. The two latter are grown as dry crops on the higher ground while the paddy is

Owing chiefly to the scarcity and inefficiency of the labour supply (which consists almost entirely of the Paniyans referred to in the last chapter), both dry and wet cultivation is astonishingly careless. The dry fields are often so thickly covered with every kind of jungle weed that it is necessary to look twice to make sure that they really are cultivated and not waste; and the paddy swamps are generally quite choked with kórai grass and other intruders which no man moves hand or foot to root out. Sometimes the ryot merely roughly clears away the screw-pine which covers all swamps in the wild or neglected state and then scatters paddy broadcast among the stumps without further tillage. The shifting cultivation of backward jungle-tribes is not more casual.

CHAP. IV. CEREAL CROPS.

Soils.

At the last settlement the soils of the dry land in the Wynaad were roughly classified into four classes; namely, forest land, better scrub, inferior scrub and grass land. The first of these is of two kinds—a dark brown sort on which timber grows luxuriantly and which is well suited to coffee and tea, and a red kind which produces good bamboo but only inferior timber. The better scrub land will do for any dry crop and for coffee; but the inferior scrub will not stand continuous cropping and has to be left fallow to recuperate after one year's cultivation with rági.

Methods on dry land.

Rági and sámai are often grown on the shifting (kumeri) system, a patch of jungle being felled and burnt, the ashes hoed in, and the seed scattered over the land after the first rains of the south-west monsoon. But the bulk of the dry cultivation is on permanent fields.

Both on dry and wet lands fencing or continuous watching is necessary to prevent wild animals from damaging the crops, and one of the characteristics of Wynaad fields is the large number of watchers' raised platforms (macháns) which are dotted about them. During the monsoon, watching all night is a damp and chilly occupation, and the men take fire braziers with them to their platforms. Deer, wild pig and (in some places) elephants are the ryots' worst foes, and when the crops are ripe parrots and monkeys have also to be guarded against.

On the best land a common rotation is rági in the first year, then sámai, then *kartan*, or black paddy, and then a long spell of fallowing; but more often a crop of rági is followed by several years' fallow and then by rági again.

On wet land.

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CHAP. IV. CEREAL CROPS.

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In the Wynaad, as the figures already given show, paddy is by far the commonest crop and the only others raised on any appreciable extent of land are rági and sámai. The two latter are grown as dry crops on the higher ground while the paddy is raised without artificial irrigation in the numerous swamps, locally called *vayals*, which occupy almost all the depressions

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On wet land.

The wet land is almost all cultivated continuously with paddy. Only one crop can be raised in the year, as in a tract so much colder than its usual habitat paddy ripens very slowly and is eight

CHAP. IV. CEREAL CROPS.

months on the ground, while the south-west monsoon is the only period when the land is wet enough for it. The seed is either sown broadcast and ploughed in during April before the monsoon begins (this is called *válchai*); or the crop is transplanted between June and August from seed-beds (*náti*); or seed is sown broadcast in July after the fields have been soaked by the rain (*hunjai*). A kind of rotation is secured by cultivating a field in these different ways in different years. Labour is so scarce that it is not possible to plant up all the fields at one time; and the seed-beds are therefore often divided into several sections which are sown at intervals one after the other so that the seedlings may be ready for transplantation in small successive batches. Cattle manure is used; but no green manure, plentiful though it is. Implements and the manner of using them are much the same as elsewhere.

SPECIAL PRODUCTS.

The figures already given show that of the special, or plantation, products coffee occupies by far the largest area (36 per cent. of the total extent cultivated in the district); that tea (10·6 per cent.) comes next after a long interval; that cinchona (4·6 per cent.) follows third; and that so far the area cultivated with others (such as the rubber briefly referred to below) is negligible.

Coffee.

The world's consumption of coffee is estimated at about sixteen million bags; and of this about twelve million bags are supplied by Brazil and the remaining four million by Java and South India. In South India more than half the coffee-producing area is situated in Mysore and the remainder in the Madras Presidency, Coorg and Travancore. According to the official returns, the area in the Nilgiris is now 26,000 acres; but the figures for this product are based for the most part on the planters' own reports, and as these are too often neither complete nor regularly forwarded the statistics are seldom really trustworthy.

Its first introduction.

According to tradition, the coffee-plant was introduced into Mysore by a Muhammadan pilgrim named Baba Booden who came and took up his abode in the uninhabited range now known as the Baba Booden hills, where he established a kind of college. It is said that he brought with him from Mocha seven coffee berries, which he planted near his hermitage. Round about this still stand some very old coffee trees.

About 1795 Colonel Read, the well-known Collector of Salem, started an unsuccessful experimental plantation at Tiruppattúr in his district;[1] and Dr. Buchanan mentions having seen some very thriving young trees at Tellicherry in

[1] Abbé Dubois' letter to the Resident of Mysore, dated 15th Septemb 1805, in *Papers relating to the coffee districts*, Madras, 1859.

1801.[1] The plant appears to have been introduced into the Malabar Wynaad from Anjarakandi by Mr. Brown in 1828, but it was not until 1839 that its cultivation became an enterprise there.[2] The first plantations on the Nilgiri plateau were started about the same time, Mr. Dawson of Coonoor putting down some plants there in 1838 and a small experiment being made in 1839 at Kalhatti with seedlings from Manantoddy.[3] Major Ouchterlony's survey report of 1847 on the plateau says—

'Numerous plantations of coffee trees are scattered about the Hills, principally situated on the slopes descending to the plains, where the elevation suitable for the growth of this shrub can be obtained. Until within the last two or three years, coffee plantations were only found on the eastern side of the Hills, but representations of the excellent quality of the berry, and of the advantages attending its cultivation on the Neilgherries, having been made in Ceylon, the attention of the skilful planters of that island was attracted in this direction, and the result has been the opening of several plantations, where I ventured to predict, in a former memoir, that this description of cultivation would sooner or later be introduced, viz., on the western slopes of the Hills, where advantages are offered to the planter eminently superior to those, the possession of which has of late years so greatly enhanced the value and importance of the neighbouring islands.

What may be called the old plantations in the other parts of the Hills, but principally on the north-eastern slopes, are insignificant in point of size but remarkable for the peculiarly fine flavour of the coffee produced, which is considered to be owing to the high elevation at which most of them are situated. Some plantations near Coonoor and Kotergherry are 5,000 feet above the level of the sea, but it seems to me that the advantage derived from this superiority of flavour is more than counterbalanced by the general want of vigour and luxuriance of the coffee trees, which evidently do not thrive in this latitude so well at an elevation above 4,500 feet, as between that and 3,000 feet. It is not easy to estimate the amount of land at present under actual cultivation for coffee on the Neilgherries, as in most cases the coffee fields are so mixed up with the mulberry grounds that it is difficult to arrive at the precise extent of each, but it may be pronounced not to exceed 280 acres on the eastern side, and 300 acres on the western.'

Shortly afterwards the Ouchterlony Valley was opened up with coffee in the circumstances set out on p. 374 below, and thirty years later (1866–67) the area planted up was returned as 13,500 acres yielding $3\frac{1}{2}$ million pounds of crop. The

[1] *Mysore, Canara and Malabar* (Madras, 1870), ii, 187.

[2] *District Manual*, 483.

[3] *Asiatic Journal*, xxxiv, 103.

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eastern, southern and north-western slopes proved the most favourable to the growth of coffee, the Kundahs on the west being too much exposed to the south-west monsoon and the northern slopes too dry.

Subsequent vicissitudes.

According to the statistics (which, however, as already stated, require to be accepted with reserve) the industry reached its highest point of prosperity in 1879, when the area cultivated in the whole district was 25,000 acres and the crop reached $10\frac{1}{4}$ million pounds. Insect pests and disease in the plantations, low prices resulting from increased production in other countries, and the dissipation of much energy in the vain search for gold in the Wynaad boom of 1879–82 caused a reaction; and in 1884–85 the exports were 3 per cent. less than in 1883–84 and their value 13 per cent. less, prices in London having dropped from between £3–5–0 and £4 a cwt. to between £2–15–6 and £2–19–0. Short crops in Brazil and speculation in the European and American markets occasioned a recovery in prices in the years following, and by 1890 they had risen to £4–:9–0 a cwt. Various diseases, however, had ruined many estates, and the exports, instead of rising in consequence of better prices, began to fall. In 1892–93 prices still kept up owing to the facts that the coffee in Ceylon had been so attacked by various pests that large areas of it had been abandoned, and that the crops in Java and Brazil were small. In 1893–94 the sustained operations of a French syndicate, aided by a series of revolutions (in 1889, 1891 and 1893) in Brazil and a short crop in Java, resulted in the high level being maintained; but in 1896–97 the Brazilian crop was splendid and the Indian one short, and prices declined sharply. In the next few years over-production in Brazil caused a further fall in all coffees of the classes which (like the Indian sorts) competed with the product of that country and were not of a grade superior to it, and this downward movement continued until 1900, when the low water-mark was reached and the average price of Indian plantation coffee was only £2–7–0 a cwt.—a decline of 50 per cent. on the figure of 1897.

Disease, however, was now doing much less damage than before, and in 1900–1901 exports began to rise in spite of the low prices realized. This rise has steadily continued up to date, and the quantity exported from the Presidency in 1905–1906 (349,500 cwts.) was 45 per cent. higher than the figure for 1900–01 and the value (171 lakhs) greater than in any year, except one, since 1895–96.

It is only however by rigid economy and constant care that coffee estates now pay, and the industry is in anything but a flourishing condition. Scores of plantations in the Wynaad have been entirely abandoned and relapsed into jungle, and others are in the hands of natives who merely pick such crop as the trees will give with the minimum of cultivation.

Cultivation

Of the 60 species into which the genus *Coffea* is divided only two are of importance; namely *Coffea Arabica* and *C. Liberica*. The latter, a native of Liberia, is the more vigorous in growth of the two, attains a greater size and age, withstands wider extremes of climate, was once (but wrongly) supposed to be less affected by disease, but produces a coarser-flavoured coffee. The former is the plant now grown, Liberian being no longer in favour.

'Its foliage resembles that of the Portugal laurel; the small, white blossom is not unlike that of the jessamine in form and scent; the berries are at first dark-green, changing, as they mature, to yellow, red, and, finally, deep crimson. Beneath the skin of the ripe berry, or "cherry" as it is called, is a mucilaginous, saccharine, glutinous "pulp," closely enveloping the "beans," usually a pair of oval, plano-convex seeds, though sometimes there is but one seed, called, from its shape, "pea-berry;" these beans are coated with a cartilaginous membrane, known as "parchment," and beneath this by a very delicate, semitransparent, closely-adhering jacket, termed the "silverskin".'

Regarding the cultivation of coffee a very considerable literature exists [1] and many divergent opinions regarding pruning, manuring and so on are held. Discussion of these points would be out of place in a book like the present.

The 'Leeming system,' so called from its warm advocate Mr. H. W. Leeming of the Shevaroy Hills, has lately been tried extensively and, in some places, with much success. This consists in leaving the coffee trees to grow freely, without any pruning, to their natural shape and reducing the number per acre to give them plenty of room. It has the advantage of saving all the expense of pruning.

Manures are almost universally employed in large quantities. Crude and refined saltpetre, poonacs (such as castor, ním and *púngai*) and also imported and artificial manures like basic slag, superphosphates, bone-dust and so on are all widely used; and the planters are now agitating for legislation to provide for

[1] A useful primer is *Coffee: its culture and commerce*, edited by C. G. Warnford Lock, F. L. S. (E. and F. N. Spon, 125 Strand, 1888), which contains a bibliography.

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the standardization of the latter and for their sale under guarantees of their composition.

Almost all the labour on coffee (and also on tea and other) estates is imported; and in 1903, on the motion of some of the planters in this and other districts who considered that the existing Act XIII of 1859 was inadequate to secure control over defaulting labour contractors and absconding coolies, the Madras Planters Labour Act I of 1903 was passed into law and now applies to the Nilgiris. The enactment had been drafted by a special committee which included a planter deputed for the purpose by the Planting Associations, but it has not found favour with employers of labour and its amendment is already under consideration.

Diseases.

Passing allusion has already been made to the diseases and pests which have so disastrously affected the coffee industry. The three worst of these are commonly called bug, borer and leaf-disease.

The first to attack the coffee trees was the 'black' or 'scaly' bug, which is known to science as *Lecanium coffeæ*. The female of this pest resembles a brown conical scale and adheres to a young shoot or the under side of a leaf. She produces hundreds of eggs and these are so small that they are easily carried from tree to tree by adhering to birds, clothing or animals. The male of the insect does not derive any nourishment from the tree, but the female has a proboscis with which she incises the bark and drinks the sap. As the insects increase in numbers the foliage is destroyed, a sugary substance, called the honey-dew, appears on the plant and a black fungus covers the whole of it, making it look as if it had been powdered with soot. The leaves fall off and the plant is starved and produces no fruit.

This pest appeared in Ceylon as early as 1845 and caused a great deal of alarm in 1847. It prevailed for a long time, appearing and disappearing in the most uncertain and perplexing manner. No real remedy has ever been discovered for it, though constant weeding and pruning did good by allowing sun and air free access to the trees, but it was found to wear itself out gradually. It has lately re-appeared in the estates round Kótagiri and below Coonoor and is causing much anxiety.

The 'white' or 'mealy' bug is a different pest, and is called *Pseudococcus Adonidum*. It is a small, flat, oval scale about a sixteenth of an inch long which is covered with white down and has parallel ridges running across its back from side to side something like a wood-louse. It takes up its quarters on

the roots of the trees, at the axils of the leaves, and among the stalks of the fruit clusters, which it cuts off wholesale while they are still young. The green berries lying under the trees are often the first indication of its presence.

The green bug, *Lecanium viride*, is another of these scale pests and has lately appeared in strength on the Nilgiris. No remedy short of the expensive processes of cutting out diseased trees, or spraying or fumigating them, has been discovered. It has been suggested that parasites which are known to attack it elsewhere, or other insects which feed upon it, might be introduced to keep it in check; but Mr. Maxwell Lefroy, Entomologist to the Government of India, considers that all experience goes to show that such endeavours are usually complete failures.

After the black bug came the 'borer,' *Xylotrechus quadrupes*. This is a beautiful insect about seven-tenths of an inch long and nine-tenths across the wings. The full-grown larva is about an inch in length, pale yellow or white in colour, with a hard head armed with very powerful mandibles. It bores its way into the heart-wood of the plant and tunnels along it, eventually killing the tree. It was the most troublesome of all the South Indian pests and in 1865–66 destroyed whole estates in Coorg and the Wynaad. In 1867 Surgeon-Major Bidie was deputed by Government to investigate its ravages in the Wynaad. It was then noticed that the insect seldom laid its eggs in shady places and that when it did they did not hatch readily. Planters therefore began to put quick-growing trees (such as *Grevillea robusta*) among their coffee to create artificial shade, and since this has been done much less has been heard of this pest. A similar but distinct insect does harm in the gardens in Ootacamund by boring into the roots and stems of woody plants such as fuchsias, arbutilon and so on.

Leaf-disease followed the borer. It is a fungus, known to scientists as *Hemeleia vastatrix*, which begins its attacks on the under side of the leaves of the coffee tree, causing spots or blotches which are at first yellow and afterwards black and are covered with a pale orange dust which easily rubs off. They increase in size until the leaf dies and drops off and the tree is thus starved and produces no fruit. The spores are readily carried about from tree to tree for long distances by the wind, and the disease thus spreads with rapidity. It was first noticed in Ceylon in 1869 and in India about 1871; and by 1875 it had devastated whole districts.

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Other pests and diseases, such as the coffee rat which gnaws off the branches and the leaf-rot which makes the leaves and some of the berries turn black and drop off, have also appeared; but their ravages are not to be compared with those of the bugs, the borer and the leaf-disease. Plantations on the Nilgiri plateau have generally speaking suffered less from all of these enemies than those in the Wynaad, but few can boast of complete exemption.

Processes of manufacture.

To those who have never seen a coffee-estate or coffee-curing works a few words descriptive of the processes necessary to produce the brown bean of the breakfast-table from the 'cherry' of the plantation may be of interest.

When the cherry is quite ripe it is picked by hand and taken in the evening to the 'pulping-house.' This is usually built in three stages or storeys, one above the other, and is so placed that a stream of water can be led to it both to drive the 'pulper' and to wash the berry in the processes below referred to. The cherry coffee is deposited in the upper storey and carried thence to the pulper by water running down a trough. The duty of the pulper is to remove the pulp which, as above described, envelopes the beans. Several patterns are in use. A common variety consists of a metal cylinder surrounded with a sheet of copper dotted with a number of small knobs raised with a punch (like the roughnesses on a grater), which is revolved at a high speed close to a horizontal bar of iron provided with a cutting edge. The cherry and the runnel of water which bears it along fall together on to the cylinder from a hopper, and the former is caught by the copper knobs and forced between them and the iron bar. The distance between these two is so graduated that no cherry can pass through whole; and the pulp is thus squeezed and torn off the beans and passes out one way, while the beans (which are now known as 'parchment coffee') are washed out another way by the stream of water.

The parchment coffee is carried down to the third, or lowest, stage of the pulping-house and into cemented tanks placed there to receive it. It is still covered with much mucilaginous matter, beneath which is the parchment membrane and, inside that again, the 'silverskin.' It is left in the tanks until the mucilaginous slime has fermented sufficiently to come away without trouble and is then transferred to washing tanks in which it is frequently stirred with rakes. The slime, any pulp that has been carried down, other refuse and all light beans then float to the top and are skimmed off, while the good beans are washed clean

and sink to the bottom. They are next drained and are finally dried on open-air cement or asphalt platforms (called barbecues) or on 'drying-tables' made of coir matting laid on wooden supports.

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When thoroughly dried, the parchment is sent down to the plains (to Coimbatore and Calicut) to be 'cured' and cleaned of its parchment and silverskin by the firms (often called 'coast agents') which make a speciality of this work. The processes are more easily effected in a dry and warm atmosphere, and moreover require special machinery and buildings which it would not be worth while to erect on each separate estate and special experience to bring the sample up to the best standard of which it is capable. The pilfering to which the coffee used to be subject on its way down to the curing works is referred to on p. 293 below.

It is found that the bean retains its colour better if it is left for some weeks in the parchment, and this is called curing. At the same time protracted curing increases the difficulty of removing the silverskin. The removal of the parchment and silverskin is called 'hulling' or 'peeling' and is effected by warming the cured coffee in the sun and then passing it through a machine similar to that used for making mortar and consisting of two large rollers which are revolved round, and near the bottom of, a circular iron pan. These rollers squeeze and rub off both the parchment and silverskin and the latter are then winnowed off and the beans are left.

To render subsequent roasting more uniform, the beans are next sorted into sizes by a 'separator.' This generally consists of a cylindrical, horizontal revolving sieve with meshes which gradually increase in size from one end of it to the other. The beans are fed in at the end where the meshes are smallest and carried right along the separator by a revolving worm inside it. Dust and dirt are first eliminated and fall into one receptacle; then the small and broken beans, which drop into another; then the next two sizes of beans; and last the peaberry. Finally the different grades are 'garbled' by women with native winnowing fans, and broken or discoloured beans are removed. The finished article is sent to England or France in air-tight casks.

Tea.

Of the tea exported from India only a very small quantity is grown in South India, and even of this latter amount the proportion raised in the Nilgiris is at present less than one-half per cent. The area under tea in the district is reported to be about 8,000 acres, but these figures, like those for coffee, require to be accepted

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with reserve since planters are irregular in sending in their returns. The area is undoubtedly increasing rapidly, however, as tea is less liable than coffee to diseases and pests and its price has not yet suffered to the same extent from over-production, so that in many cases it has been planted on estates on which coffee had proved a failure.

Its first introduction.

The history of the cultivation of tea in the district dates from 1833. Assistant-Surgeon Christie had noticed that a *Camelia*, which was known to resemble its cousin the tea-plant in its tastes, grew abundantly near Coonoor, and he therefore ordered some tea-plants from China. He died before they arrived, but the plants were distributed to various parts of the hills for trial.[1] In 1835s ome plants raised from seed brought from China by the secretary of a committee appointed by the then Governor-General to consider means to introduce tea-cultivation in India were sent from Calcutta to the Nilgiris—and also to Coorg, Mysore and Madras. Those sent to the Nilgiris were chiefly planted out at the Kéti experimental farm referred to below. When this was closed in 1836 and its buildings were lent to the Governor of Pondicherry as a residence (see p. 331), M. Perrottet the French botanist found that the plants had been half-buried by ignorant gardeners and were consequently in a very bad state. He uncovered them and cared for them, and by October 1838 they had grown to four feet in height and were loaded with flowers, fruit and healthy young leaves. He published an account of them [2] which attracted attention and in 1840 samples of Nilgiri tea made from plants growing at Kéti and Billikal were sent by Mr. J. Sullivan to the Madras Agri-horticultural Society. The leaves had been withered in the open and fired in a frying-pan for want of better means, but the tea was pronounced excellent by the enthusiasts who tasted it.[3]

Later Mr. Mann of Coonoor succeeded in making really fair tea from the Nilgiri plants and was thus encouraged to get more seed. He procured a supply from the finest plantations in China early in 1854, and after many difficulties put them down in the piece of land near Coonoor which is now known as the Coonoor Tea Estate. As early as 1856 the tea made from these plants was favourably reported upon by the London brokers, but Mr. Mann

[1] Baikie's *Neilgherries* (1st edition), 37.

[2] This will be found in *The Fort St. George Gazette* of 10th April 1839 and also at the end of Mr. Robertson's report of 1875 on the agricultural conditions of this district.

[3] *Asiatic Journal*, xxxii (1840), 23,320.

was so disheartened by the difficulty of procuring forest land to extend his operations that he eventually gave up the experiment.[1]

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Dr. Cleghorn, Conservator of Forests, noticed later on how well the trees were seeding and endeavoured to induce Government to form a nursery from this seed and to import a trained Chinese tea-maker or two from the North-West Provinces. But Sir Charles Trevelyan, then Governor of Madras, in a characteristic minute strongly deprecated State intervention in the matter and the 'morbid habit of dependence upon Government, which in some communities has amounted to a moral paralysis.'

About the same time as Mr. Mann formed his plantation at Coonoor, Mr. Rae obtained a grant of land near Shólúr, now known as the Dunsandle Estate, for growing tea; shortly afterwards a garden was begun at Kótagiri; and in 1863 the estate known as Belmont was formed on the Bishopsdown property at Ootacamund.

During Sir William Denison's governorship some direct aid was afforded to the new industry in 1863 and 1864 by bringing down tea-makers from the North-West Provinces, distributing gratuitously a stock of seed also obtained from thence, and forming a small nursery within the cinchona plantations at Dodabetta; but none of these steps effected much good and the tea-planters worked out their own salvation by their own energy.

And subsequent extension.

By the end of 1869 some 200 or 300 acres had been planted with tea and at the Ootacamund agricultural exhibition in that year no less than eighteen planters showed samples of their produce. At the suggestion of Mr. Breeks, Commissioner of the Nilgiris, some of these were sent Home by Government for the opinion of the brokers, and many of them were pronounced good and some very good, their value ranging from 1*s*. 4*d*. to 6*s*. per pound.

Since then the output has steadily increased year by year, notwithstanding a corresponding gradual decrease in the prices realized, which are now less than half what they were in the seventies.

Efforts are being made to create a market for tea among natives of India, which, if established, would free the growers from the heavy middlemen's charges which absorb so much of the profits on this and other produce disposed of through Mincing Lane. From the 1st April 1903 a compulsory customs cess of one quarter of a pie per pound on all tea exported from India was imposed by

[1] *District Manual*, 511.

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law and the proceeds of this are handed over to a Tea Cess Committee to be expended in pushing the sale and increasing the consumption of tea outside the United Kingdom.

Processes of manufacture.

The tea plant is botanically a Camelia, and its blossom closely resembles that of the ordinary single white Camelia and has a similar scent. Three varieties are grown. First there is the pure China tea, the chief merit of which is its hardiness; then, the indigenous Assam sort, which in its natural habitat is a forest tree growing to a height of 25 or 30 feet; and lastly the hybrid between these two, which is the most useful and generally grown of the three. This produces twice as much leaf as the pure China, and yet possesses a great deal of the latter's hardiness.

The cultivation and manufacture of tea are subjects on which much has been written [1] and the details of which are quite outside the scope of this present volume. A few words may however be said regarding the processes through which the leaf passes from the time when it is plucked until it is duly packed in its lead-lined chest.

Each of the leaves of the shoot of a tea plant is known by a technical name. The bud at the extreme end is called the tip or flowery pekoe; the two next to it orange pekoe; the two next souchong; and the next two, the largest of the series, congou. When a 'flush,' or burst of young green leaf, occurs on the estate these (or, if 'fine plucking' is required, the bud and the first two) are all plucked together by women and children. They are not kept separately then, but are sifted afterwards by machinery. The leaves are plucked into baskets and carried the same day to the tea factory. Unlike coffee, tea cannot be partly manufactured on the estate and partly afterwards elsewhere, and every plantation must therefore either possess its own tea-making plant or be near enough to some other estate which is equipped with the necessary machinery and is willing to make a neighbour's leaf into tea for a consideration. Thus much outlay in buildings and machinery is usually required for starting a tea-estate; and tea-planting has the further disadvantage when compared with coffee-growing that manufacture is going on almost all the year round; whereas the coffee-planter enjoys comparative peace and quiet except at that one period of the year when his crop is coming in.

Having been taken to the tea-house, the leaf is 'withered' by being spread thinly on shelves of some material and left there until it can be rolled between the fingers without breaking.

[1] A useful handbook is *The Tea Planter's Manual* by T. C. Owen (Ferguson, Colombo, 1886).

Like almost every other process in tea-making, this stage requires to be timed with care and experience. If the leaf is not sufficiently withered it will break when 'rolled' as described below, while if it is left to wither too long the quality of the 'liquor' made from it is inferior.

When the withering is complete the leaf is taken to be rolled. This is done in machines consisting of two horizontal brass-faced plates placed one above the other like the stones in a mill, which are rapidly revolved by steam with an eccentric motion. This rolling, again, requires to be timed to a nicety or subsequent processes are adversely affected. The smaller leaves naturally roll quickest, so to secure evenness in the rolling and subsequent fermenting (see below) the leaf is next usually sifted and the bigger leaf rolled a second time. When the rolling is complete the leaf is laid out in a thin layer in a darkened and moist room and left to ferment. This process requires perhaps more careful watching than any other, the time required to complete it differing with the size of the leaf, the elevation, and the humidity and warmth of the atmosphere. The point at which the process is complete is judged partly by the smell, and partly by the colour, of the leaf. It should be a bright copper colour. The moment this stage has arrived fermentation must be stopped by 'firing' or roasting the leaf. This is effected by scattering it in very thin layers on shallow wire trays and placing the latter in a machine called a 'sirocco,' in which hot air from a charcoal fire is drawn over and between the trays by a fan. This firing changes the leaf into the usual black tea of the shops. This operation again requires extreme care. Any tea which has been burnt by overfiring makes a bitter 'liquor;' and unless the overfiring is detected at once before the spoilt leaf is mixed with the rest of the 'break,' a few ounces of this overfired leaf will ruin the flavour of many pounds of good tea.

Next, the fired tea is sifted by machinery. Different estates make different grades of tea, but the classes usually distinguished are orange pekoe, broken pekoe, pekoe, pekoe souchong, broken souchong and congou, which are named from the nature of the leaves (see above) of which they consist. The largest leaves are then broken in a special machine which cuts them into neat pieces.

The tea is finally stored in bins until it is ready to be packed. To make sure that it is absolutely dry and will not get musty in transit, it is generally given a final firing just before being placed in its lead-lined chest. Well-equipped tea-factories

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possess an ingenious machine for packing. This consists of a little table, big enough to carry a chest, which is vibrated rapidly by machinery. The chest is placed on this and the vibrations shake the tea evenly and tightly down into all the corners.

Cinchona.

The cinchona tree, it is perhaps hardly necessary to state, is cultivated for the sake of the quinine and allied alkaloids which are yielded by its bark and which are the basis of all remedies for malaria. The total area planted with cinchona in the district is at present only some 2,600 acres (the greater part of which is situated in the Ootacamund taluk) but the former importance of the industry and the share which Government take in it with the object of providing cheap quinine for the masses justify some account of its history in the past and its existing position.

Its introduction.

The cinchonas, of which there are numerous species, are natives of South America. It is an unsettled point whether the virtues of quinine were known to the Indians there before the arrival of the Spaniards, but the fact that quinine is a corruption of the Indian word 'quina-quina,' or 'bark of barks,' raises the inference that they were. To the Countess of Chinchon, the wife of a Viceroy of Peru, and her Jesuit friends is the world indebted for the introduction into Europe, in 1640, of this inestimable febrifuge. It was long known as 'Countess' powder,' 'Jesuit's bark' and 'Cardinal's bark;' and hence arose the early prejudices of Protestants against its use.

A century elapsed before the genus of the quina-quina tree was established by the famous botanist Linnæus in 1742. He paid a just tribute to the Countess' memory by calling it after her; and his successors have extended the name to the very numerous allied plants which are comprised in the natural order Cinchonaceæ and include many of the most valuable remedial agents known to medical science.

It was not until 1846 that the first cinchona plants were grown in Europe. They were raised from some seed of *C. calisaya* despatched to the Jardin des Plantes at Paris by Dr. Weddell in that year; and one of them was sent to Java and became the first plant ever grown there and the author of a numerous progeny. Fear had long been felt that the wanton destruction of the cinchona trees by the bark-collectors in South America would eventually result in the destruction or serious restriction of the supply of quinine from thence, and the importance of introducing the plant into other countries became generally acknowledged—especially by the English and the Dutch, who owing to their eastern possessions were the chief consumers.

The French Government made an unsuccessful attempt in 1850 to introduce the plant into Algeria; and it was the Dutch who first took the matter seriously in hand. In 1852 a botanist was deputed by them to collect in South America plants and seeds of the more valuable varieties and convey them to Java, and two years later his mission was accomplished. The species he collected were mostly worthless, however, and it was not until 1864 that the enterprise began to be satisfactorily conducted. As will be seen further on, Java now controls the world's market.

In British India the importance of action had long been urged on the authorities. As early as 1835 Dr. Forbes Royle, then Superintendent of the Gardens at Sahárunpur, had suggested the introduction of cinchona on the Khasia and Nilgiri hills; and he continued to press the point for many years. At length, in 1852, Lord Dalhousie, then Governor-General, suggested to the Court of Directors that some one should be deputed to South America to collect plants and seeds. Dr. Forbes Royle, who was now employed at the India House, supported the recommendation; but all that was done was to obtain some plants, all of which died on the voyage, through the Consular Agents. Undefeated, Dr. Royle again brought the matter forward in 1856 and 1857, and at length the Directors (perhaps influenced by the fact that the Indian Government were now spending nearly £10,000 per annum on quinine and cinchona bark) agreed to despatch a botanist-collector to South America. Mr. (afterwards Sir Clements) Markham, who was then a clerk in the India Office and was well acquainted with the Cordilleras (where cinchonas abounded) and the dialects spoken there, volunteered in 1859 to superintend the work and his services were accepted.

Accompanied by four assistants, he reached Peru in January 1860 and arrived on the Nilgiris in October of the same year with a number of plants of *C. calisaya* and some of inferior varieties, all of which eventually died. In April of the following year Mr. Cross, one of his assistants, reached Ootacamund with a stock of *C. succirubra* plants and a few *calisaya*; later on two others of his assistants sent seeds of *micrantha, nitida, Peruviana, Condaminea* and *crispa*; and in 1868 Mr. Cross despatched seeds and a few plants of *lancifolia* and *Pitayensis*.

Government plantations begun.

Previous to Mr. Markham's arrival in October 1860, Mr. W. G. McIvor (an expert horticulturist, trained at Kew, who had been in charge of the Government Gardens at Ootacamund since 1848) had selected as a site for the cinchona plantations the wooded ravine

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on Dodabetta above the Government Gardens where the Dodabetta plantation now stands; but Mr. Markham thought that, though this would suit the varieties which grew at high elevations in South America, the species requiring a warm and moist climate would hardly do well there, and he selected for these latter the site of the present Government plantations at Naduvattam on the western edge of the plateau. In 1862 Government also approved Mr. McIvor's choice of the two wooded slopes on either side of the Paikára waterfall which were afterwards known respectively as the Wood and Hooker plantations after Sir Charles Wood, then Secretary of State, and the famous botanist. In 1863 the opening of a plantation called Stanley at Mélkundah, on the southern edge of the Kundahs, was also sanctioned. The cultivation of this, it may here be noted, was stopped in 1871, but the trees were left standing in order to ascertain whether they would flourish if left to themselves. They were speedily choked with jungle and the estate is now a ruin.[1]

These estates were only very gradually planted up. In 1862, 31 acres were opened at Naduvattam; in 1863 planting on the Dodabetta and Wood properties was begun and Naduvattam was slightly extended; and apparently it was not until 1868 that the first planting was done on the Hooker estate. By that year cinchona seems to have been put down on a total of 355 acres in the four estates, but the official figures are conflicting and unreliable. Labour was so scarce that much of the work was done by convict labour; and the natives still call the Government plantations the 'Jail totes' and the old maps mark the sites of the temporary prisons in which the convicts were confined. Some of these men were Chinese who had been sent over to Madras jails from the Straits Settlements (where prison accommodation was scarce) and when their sentences expired a few of them settled down with Tamil wives at Naduvattam in a spot now known as 'the Chinese village,' where they subsist as market-gardeners and dairymen.

The objects to be kept in view in these experiments with cinchona were described as follows by the Secretary of State:—

'The two first objects of the experiment are the provision of an abundant and certain supply of bark for the use of hospitals and

[1] Interesting particulars regarding the beginnings of the experiments with cinchona will be found in the Parliamentary Blue Books on the subject published in 1863, 1866, 1870 and 1876. The quinology of the East Indian plantations has been exhaustively dealt with by Mr. J. E. Howard and details regarding the cultivation of cinchona are to be found in the works of Sir George King, W. G. McIvor, J. C. Owen, Van Gorkom and Moens.

troops, and the spread of cultivation through the hill districts in order to bring the remedy within the reach of the frequenters of jungles and of the native population generally. Your Government has very justly deemed that the experiment cannot be regarded as a mere money-speculation, nor are the commercial advantages that may be derived from it to be considered as other than a secondary consideration, though, of course, a return of the outlay and the spread of cinchona cultivation by private enterprize are very desirable in themselves.'[1]

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The first febrifuge made.

Barks from the Nilgiri trees were sent to England for analysis as early as practicable, and as they showed that Indian cultivated cinchona would successfully yield the quinine and other alkaloids desired, the Secretary of State appointed, in 1866, Mr. John Broughton, B.Sc., F.C.S., an Assistant at the Royal Institution, as Government Quinologist to investigate on the spot the various questions which had arisen regarding the cultivation of the tree and the extraction and use of its alkaloids, and especially the best and cheapest way of preparing an efficient febrifuge for use among the poorest classes of the native population, in the hospitals, and by the troops.

After numerous experiments extending over four years Mr. Broughton adopted as the best febrifuge a combination of alkaloids which was called 'amorphous quinine.' It was manufactured for three years; but doubts having been thrown upon its efficacy and its cost being actually higher than imported quinine, Government in 1874 resolved to cease making it and Mr. Broughton resigned his appointment, which was then abolished.

Changes in administration.

All this time the cultivation of the Government estates had been under the charge of Mr. McIvor, who was designated Superintendent of the Cinchona Plantations and remained in charge of them until his death in 1876. From that year to 1880 the estates were directly under the Commissioner of the Nilgiris; and from February 1881 they were placed under the care of the Forest department. Practically the whole of the bark harvested was sent to England or sold locally by auction, and quinine manufacture by Government was in abeyance. The extent cultivated in the various estates (according to a survey made in 1878) was 843 acres distributed among them as shown in the margin.

	ACRES.
Dodabetta	314·92
Naduvattam	301·63
Wood	72·18
Hooker	154·19
Total ...	842·92

[1] Blue Book, Vol. I, page 255.

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In June 1883 Mr. M. A. Lawson, who had been sent out from England, became Government Botanist and Director of the Government Cinchona Plantations, Parks and Gardens; and in 1884 the appointment of Government Quinologist was revived and Mr. D. Hooper appointed thereto.

Private planting of cinchona.

Meanwhile the extremely high price of quinine (wholesale, £9–12–0 per pound in 1878 against 12*s.* per pound in 1906) and the damage which had in so many cases been caused on coffee estates by pests and diseases had induced a number of the planters on the hills to take to the cultivation of cinchona; and a flourishing private industry arose of which the highest hopes were entertained. It first started in 1867, and by 1884 4,000 acres of private cinchona plantations had been opened and the outturn of bark on these was put at 243,000 lb. against the 116,000 lb. in the Government estates. For reasons similar to those already given in the case of coffee and tea, the statistics of cultivation and output are not reliable, but apparently they reached a maximum in 1888–89. The average price of quinine in London (which in 1881–82 had been 10*s.* 3*d.* an ounce and in 1884–85, 7*s.*) had by then fallen to 2*s.* owing to over-production in Ceylon and Java, and cinchona-growing ceased to be a profitable investment. Its extension has long entirely ceased, though owners of estates planted in the prosperous days still continue to collect and sell the bark of such trees as have not been dug up to make room for more paying products. About the same time (1888–89) as the industry began to decline on the Nilgiris, Ceylon planters also began to abandon cinchona-growing; and the world's market is now controlled by Java, which produces about 800,000 lb. out of the total annual consumption of one million lb. of quinine.

Work on the Government plantations at present.

To revert to the operations in the Government plantations on the Nilgiris. With the appointment of Mr. Hooper in 1884, local manufacture began again. The production of a mixture of the cinchona alkaloids was at once undertaken, and in 1889 the Naduvattam factory was established and the first sulphate of quinine was made.

In 1896 the post of Government Quinologist was abolished, that of Government Botanist was made distinct from it, and the plantations were placed under a Director, who was required not only to attend to their cultivation but also to superintend operations in the quinine factory at Naduvattam.[1]

[1] The Director so appointed was Mr. W. M. Standen, who still holds the post. He has very kindly supplied most of the material for this account of cinchona.

In 1901 new and improved machinery was installed in the factory which not only increased its capacity but almost halved the cost of production. The factory now treats the whole of the bark raised on the Government estates and, since 1897, also buys largely from private growers. The bark thus purchased is paid for at the prevailing London market rate in accordance with its richness in alkaloids as ascertained by analysis by the Director, and the planter thus saves the cost of freight to England and all sale commissions. As these amount to about one anna per pound of bark and as during the nine years 1897 to 1905–06 no less than 2,387,000 lb. have thus been purchased, the planters have benefited by the arrangement to the extent of Rs. 1,49,000.

In 1905–06 the output of the factory was 16,300 lb. of sulphate of quinine. The quinine made there is sent to the Medical Dépôts at Madras and Bombay, to the Central Provinces, the United Provinces, Rajputana, Burma and to Native States, as well as to local fund and municipal hospitals in this Presidency. In addition to this despatch in bulk, the drug is placed within the reach of the poorest classes all over the country by the well-known 'pice-packet system,' which was first started in 1892 and under which 7-grain doses are sold to the public for three pies apiece at all post-offices and certain revenue offices. In 1905–06, 4,000 lb. of quinine were sold in this manner in Madras and other provinces and the constantly increasing demand sufficiently proves the success of the plan. The total sales of quinine at the Naduvattam factory have risen from 234 lb. in 1889 to 17,446 lb. in 1905–06. Since the plantations were first established the receipts have exceeded the expenditure by no less than 15 lakhs.

Maintenance of the supply of bark.

It has already been said that private cinchona cultivation is at its lowest ebb, and it is therefore necessary that Government should maintain sufficient trees to meet the increasing demand for quinine. In 1897 the area of the Government plantations had fallen from the 843 acres of 1878 to 740 acres—partly owing to the closing (in 1895) of the Wood estate, which had never been successful, and partly to the abandonment of inferior plots in the others. Government therefore decided to open new land and directed that 80 acres should be planted annually for the next 15 years so as to bring the extensions to 1,200 acres in all. By the end of 1903, 440 acres had been opened in this manner; but the difficulty of finding sufficient suitable land in the neighbourhood of the factory has prevented the completion of this project, and the present policy is to increase the yield by intensive rather than extensive cultivation. The existing estates are therefore being

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re-stocked from seed from selected trees which have been proved by analysis to yield a high percentage of quinine. The bark of one tree (*C. officinalis*) in the Dodabetta estate gave as much as 13·90 per cent. of sulphate of quinine.

The species of cinchona grown.

It remains to explain briefly the processes followed in harvesting the bark and manufacturing the sulphate. Of the numerous species of cinchona, *officinalis* has been proved to be the most suitable on the Nilgiris. The bark of this is still known by the name 'crown' bark which was originally given it because the *officinalis* barks from the Loxa region in South America were reserved in the old days for the use of the royal family of Spain. *Succirubra*, which was formerly largely grown on the Nilgiris, has now been given up because it yields a poor percentage of quinine; but hybrids between it and *officinalis* are still cultivated as many of them are rich in alkaloids and they are of a more robust habit than the pure *officinalis*.

Harvesting of the bark.

In harvesting the bark of the cinchona four methods have been followed; namely, stripping, shaving, coppicing and uprooting. Stripping consisted in removing long, narrow, lengthwise strips of the bark at intervals round the tree, binding moss over the wound to accelerate the formation of fresh bark, and repeating the process as soon as the new bark had grown sufficiently. This system and shaving have long been given up in the Government plantations, as they were found to affect the health of the trees prejudicially; and at present almost all the harvesting is done by coppicing, uprooting being resorted to only in the case of old trees which are not likely to reproduce freely from stools. In the coppice system, the tree is cut down close to the ground in about its fifteenth year, and the bark is sliced off and dried in the sun or by artificial heat.

Manufacture of quinine.

All bark, however harvested, is treated in the same manner in the factory. It is first reduced to a fine powder in a disintegrator; is next mixed with a solution of caustic soda; and is then conveyed to two large extractors each taking 1,000 lb. of bark, which are fitted with stirrers and steam coils. Shale oil is run into each extractor and the mixture of oil, bark and soda is well stirred while steam is let into the coils to maintain the temperature of the mass at about 100° C. The power required for driving the stirrers is supplied by a turbine, and two boilers are used to provide the steam. After two hours' agitation the contents of the extractors are allowed to rest, and the bark and soda solution then settle at the bottom of the extractors while the oil rises to the surface. In this first process the shale oil, which is a valuable

solvent, takes up the cinchona alkaloids in the bark. These alkaloids, which consist chiefly of quinine, cinchonidine and cinchonine, exist in the bark in the form of quinates and cinchotannates. As salts, they are insoluble in the ordinary solvents, but the caustic soda breaks up the combination with the organic acids and leaves the alkaloids in a condition in which they are soluble in shale oil.

The oil, now charged with alkaloids, is run into a rectangular lead-lined tank at the bottom of which is a perforated coil for the admission of compressed air. A hot solution of sulphuric acid is led into this tank, and the oil and acid are well mixed by a strong current of compressed air. After a short agitation the contents of the tank are allowed to rest, with the result that the acid solution settles at the bottom while the oil remains above. At this stage the alkaloids have combined with the sulphuric acid to form acid salts which are in a state of solution in the acid liquor. The oil is now free from alkaloids and is pumped into the extractors and used for a second washing or agitation with the bark, and finally for a third washing. After each period of agitation the oil is relieved of its alkaloids by admixture with the hot sulphuric acid solution as above described. After the third agitation all the alkaloids in the bark have been extracted; and the bark itself is then run out as waste while the acid liquor, which is highly charged with acid salts of the alkaloids, is filtered and run into a montejus, from which it is driven by compressed air to the boiling pans on the upper floor of the factory.

There it is boiled and neutralized, and is then transferred to troughs for crystallization. The basic salts of quinine (with some cinchonidine) now crystallize out when the liquor cools; while the salts of cinchonine remain in solution on account of their greater solubility.

The contents of the troughs are next run into a centrifugal machine which quickly drives off the mother liquor. This liquor, which contains sulphate of cinchonine and some sulphate of cinchonidine in solution, is led into a masonry tank where it is treated with an excess of caustic soda with the result that the alkaloids are precipitated. These are filtered and dried. The crude quinine sulphate is taken from the basket of the centrifugal, is dissolved in boiling water, filtered, and recrystallized in shallow troughs. The cinchonidine sulphate, being more soluble, remains in solution while the quinine sulphate crystallizes out. The contents of the troughs are now put through the centrifugal, the pure quinine sulphate remaining in the basket of the centrifugal

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while the liquor which holds the cinchonidine sulphate and some quinine sulphate in solution is run into a tank where it is treated with an excess of caustic soda. The result is a precipitation of the cinchonidine alkaloid with some quinine alkaloid. This mixture of alkaloids is subsequently treated with sulphuric acid, is boiled and neutralized, and a small quantity of quinine sulphate is recovered by fractional crystallization. The cinchonidine sulphate which remains in solution after passing through the centrifugal is precipitated with an excess of caustic soda. The cinchonidine alkaloid is then collected and dried and mixed with the cinchonine alkaloid. The mixture is known as cinchona febrifuge. The quinine sulphate, which has been partially dried in the centrifugal, is removed to the drying room, where it is dried on trays until it contains the requisite amount of moisture, which is about 15 per cent. It is then ready for packing and distribution.

It has been the practice for some years to give a pink colour to the Government quinine with a view to preventing its fraudulent sale. This colour is obtained by the use of eosin, a weak solution of which is run into the centrifugal while the quinine sulphate is being dried.

Rubber.

Of the less important special products grown by European enterprise on the hills that which is at present attracting the most attention is rubber.

Of the 80 odd plants and trees which yield marketable rubber[1] three stand out above the others; namely, (1) ***Hevea Brasiliensis***, called Pará rubber from the district round one of the mouths of the Amazon in which it abounds, (2) ***Manihot glaziovii***, known as Ceará after a coastal province in Brazil where it flourishes, and (3) *Castilloa elastica*, which is also a Central American tree.

Its introduction.

The first rubber trees planted in South India were apparently some Ceará plants sent from Kew to the teak plantations at Nilambúr in Malabar in October 1878. Some Pará plants were received at the same plantations in June 1879 from the Botanic Gardens, Ceylon, and some Castilloa at about the same time. At the Government Gardens at Barliyár in this district stand Pará and Castilloa trees which were planted in 1881 and are now five or six feet in girth one foot from the ground; and at Plantation

[1] A conspectus of these will be found in J. G. McIntosh's translation of Seeligmann and Torrilhon's *India Rubber and Guttapercha* (Scott, Greenwood & Co., Ludgate Hill, 1903), which also contains a bibliography of rubber occupying eleven closely-printed pages. The latest handbook on Pará rubber is *Hevea Brasiliensis or Pará rubber* by Herbert Wright (Ferguson, Colombo, 1906).

House, the late Mr. T. J. Ferguson's residence at Calicut, are some specimens of the three trees which were put down about 1879.

About 1882 Mr. Colin Mackenzie and some others combined to open an experimental plantation of tea and Ceará with experimental patches of Castilloa and Landolphia (a West African rubber-yielding creeper) at Ingapoya in the Calicut taluk at the foot of the Tamarasséri ghát, but abandoned the undertaking owing to the title to the land being defective. About the same time, following the lead of Ceylon, many of the Wynaad planters and at least one of those at Kótagiri tried Ceará either in small plots or as shade among coffee. The distractions of the gold-mining boom, the discovery that Ceará actually killed any coffee growing under it, the reports from Ceylon that this tree's yield of rubber was variable and uncertain, the damage done to it by monkeys, pigs and porcupine, and the general ignorance of the best methods of tapping it, gradually led to the neglect of the experiment. Numbers of Ceará trees planted then are still standing (there are some fine specimens, for example, in some abandoned coffee at Cheppatódu near Chérambádi on the right of the road to Sultan's Battery) and several hundred in the Malabar Wynaad were recently tapped by an enterprising planter and yielded rubber which realized 6s. a pound.

Extent now planted.

About 1898 interest in rubber revived and Mr. A G. Nicholson planted some Pará and Castilloa on his Hawthorne estate on the Shevaroys and some more in 1902 on his Glenburn property below Kótagiri. Many planters have lately put down trees (nearly all Pará) among their coffee or in small patches, and it is calculated that about 1,200 acres have thus been planted up in this district. In Cochin, the Ánaimalais, and the Shevaroys somewhat similar areas have been planted out, in Malabar and on the Palnis smaller extents, and in Travancore as much as 6,000 acres. The Nilgiris thus has no monopoly of the new industry in this part of India. The biggest venture to date in that district is that of the Glenrock Company at Pandalúr, which has just put down on the lower part of its property 16,000 plants obtained from the Barliyár Gardens.

Harvesting.

Rubber-producing trees yield a latex consisting chiefly of water and caoutchouc globules but containing small quantities of sugars, proteids, gums, resin and mineral matter. This is contained in definite ducts occurring throughout the plant and especially in the bark, from which latter alone is it usually extracted. Extraction is effected by cutting through the outer layers of the bark with special tapping-knives so constructed as

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to render injury to the cambium impossible and collecting in tins the latex as it drips from the incisions. The incisions are systematically and regularly made in the form of spirals running round the tree, herring-bone patterns, and so on, and the edges of them require to be continually carefully re-cut so that the latex cells may be re-opened and continue to flow. In this way the whole of the bark of a tree is in time removed and renewed. After collection, the latex is left to coagulate in shallow pans (or the process is accelerated by artificial means), the caoutchouc globules rising to the surface and forming a thin sheet of rubber which is known as 'biscuit' or 'sheet' rubber. These contain proteid matter which is apt to putrefy and spoil the rubber, and they have consequently to be carefully washed and dried. Sometimes this is effected by putting the rubber through a machine which cuts it up into small pieces, exposes these to a strong current of clean water, and finally reunites them by pressure. The resultant product is known as 'crêpe' rubber. 'Lace' and 'flake' rubber are other newer forms. 'Scrap' rubber is that which dries in and round the incisions made by the tapping knives and fails to fall into the collecting tins.

The whole subject of the cultivation of rubber trees is as yet in its infancy and it has still to be definitely ascertained what soils, climates and elevations will best suit the various varieties. Harvesting processes are similarly in the initial stages: as yet no really satisfactory tapping knife has been invented and widely different views prevail as to the best manner of tapping, the age at which it should be begun, and the frequency which is permissible. The best methods of preparing the rubber for the market are even less settled as yet, and doubtless the next few years will see great advances. Fortunately for South Indian planters, the whole subject is being most carefully and systematically worked out in Ceylon.

Rhea fibre.

Between 1886 and 1888 an experiment on a large scale with rhea (or ramie) fibre was made by the Indian Glenrock Company. About 400 acres were planted near Pandalúr by the late Mr. J. W. Minchin and 200 on the plateau by Mr. H. P. Hodgson. The plant grew well and gave long, fine stems, but it was found impossible to produce either the ribbons or the clean fibre on a commercial scale with profit, and after considerable expenditure the experiment was abandoned.

FRUIT-TREES, ETC.

English fruit-trees were imported to the Nilgiris almost as soon as the first Europeans had settled there; but no systematic record survives of the varieties which were tried or of the success which each achieved. The following notes have kindly been written by Mr. George Oakes, who has conducted numerous

experiments at his estate Downham near Kalhatti, in consultation with Mr. Charles Gray, who is also making systematic trials at his place Orchardene near Coonoor. Papers on the subject by General Morgan, Sir Frederick Price and General Baker, all well known for their interest in it, will be found in the Proceedings of the Nilgiri Agri-horticultural Society for March 1902.

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Apples.

Apples and pears have perhaps received more attention than any other English fruit. Mr. John Davison, who was a gardener trained at Kew and at one time owned Gray's Hotel at Coonoor, was one of the first to succeed with apples, and is said to have introduced the pippin which is now so common on the hills and is quite acclimatized. The fruit of this is a handsome apple which frequently weighs over a pound and varies in colour from yellow streaked with red to a brilliant scarlet. Grafted on the crab stock it thrives vigorously and bears heavily in situations above 5,000 feet in elevation. It is best grown in bush form.

Coonoor, Kátéri, Kótagiri, the slopes round Kalhatti and the higher parts of Ootacamund where frost does not settle all suit apples well; and excellent varieties have been raised by General Baker at Tudor Hall, General Morgan at Snowdon and Captain Frend, while the Badagas have also planted numerous patches of the pippin above mentioned. Almost all the apple orchards have, however, been attacked by that worst of foes the American aphis, which affects not only the branches but the roots as well and for which no real cure short of burning up the whole tree, root and stock, is known. This pest has killed out whole orchards and is so easily spread broadcast by the clothes of coolies working among the trees, by sambhar, by grafts from infected trees and even by fruit being hawked round, that fear of it now deters many from attempting apple-growing. Plants brought from England, where no proper precautions are taken to disinfect exported plants, are often infected when they arrive; and the safest method is to obtain fresh stocks from Australia, with which a Government certificate testifying that the plants have been disinfected with hydrocyanic acid gas can always be obtained for a small fee. Owing to the difference in the Australian seasons these, moreover, arrive on the hills at a more suitable time and so run fewer risks in becoming established.

Besides the American aphis, the only other disease from which apple trees greatly suffer is canker, which generally starts at the collar and is usually caused by excess of manure, by the roots getting down into a cold subsoil, or by the bark being injured by the careless use of the mamuti when weeding. It can be checked by cutting out the diseased part and painting the

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At Downham, Australian apples have been largely planted and do well, the best kinds being Margil, Devonshire Quarrenden, Adams' Pearmain and Ecklinville Seedling. The trees winter well from December to the end of February, are pruned and winter-sprayed in January and ripen their crop in July and August. Owing to the forcing climate, trees require root-pruning oftener than in England and summer pinching or stopping in July. In ordinarily good soil manure is hardly necessary, a mulching of burnt refuse, with a small quantity of well-rotted manure being sufficient. Apples do well as espaliers, since the fruit does not get blown off so much as on the standard or bush tree, the trees do not take up so much room, and they are more easily netted to keep off birds.

Pears. Pears do as well as apples, but take longer to come into bearing. On the other hand they are very long-lived and (unless the frost cuts off the blossom) bear very regular crops. They do no good if grafted on the quince, and as imported trees are often so grafted the only way to remedy matters is to earth up the tree above the stock and induce the pear to send out roots. These will soon completely suppress the quince. The best stock for pears of any variety is the China pear, which is generally known on the Nilgiris as 'the country pear.' Cuttings from this will be sufficiently rooted in twelve months to be budded or grafted. The best season for these operations is January or February.

Pears do best on a rather heavy soil, but this must be well drained. They are very impatient of drought, and as soon as growth begins in February the roots should be mulched over with long manure or bracken and kept moist. The most successful variety at Downham has been the Jargonelle grown as a standard or bush tree. It blossoms in January and the fruit ripens in May and June. There are a few trees of Williams' Bon Chrétien in old Ooty which bear well. This is a large pear and very highly flavoured, but like the Jargonelle it does not keep well. A pear known as the Keiffer or Bartlett, which is grown very largely in America for canning, has lately been introduced from Sahâranpur. It is very vigorous and gives early and regular crops. The fruit is not unlike the Bon Chrétien. Grafted or budded on the China pear it fruits in the second or third year. Pitmaston Duchess, Louise Bonne of Jersey and Beurre Diel, all imported from Australia, promise well at Downham. They are

now in their third year and are from 7 to 10 feet high and winter regularly from December to March.

Medlars. Medlars are growing well at Downham and have fruited. The variety tried is the Royal. These are handsome trees, especially when in blossom, but their fruit is not much liked. They winter for only about six weeks.

Quinces. The quince thrives in almost any part of the hills if only its roots, which grow very near the surface, do not get too dry. The fruit is abundant, but is only fit for making into jam or jelly. The tree is easily propagated from layers or cuttings, but is of no use as a stock in this country except perhaps for fruit culture in pots.

Peaches. Peaches are generally raised from the stone and may be seen growing in almost every coffee estate and garden about Coonoor and Kótagiri; but with hardly any exception their fruit is only fit for stewing. Mr. Redmond introduced some very good varieties into Kótagiri over twenty years ago, but when he left the trees were neglected and have mostly disappeared. Peaches grow and fruit best in the warmer parts of the hills (5,000 to 6,000 feet) and prefer a light warm soil. If the land is at all stiff or cold they are very subject to 'curl' and the wood does not ripen well. Peaches from England are generally grafted or budded on the almond or plum stock and do not thrive. The best stock on the Nilgiris is the seedling of the common peach, which at one year old is large enough to bud. For grafting, it is better to move the stock when one year old and graft the following season. The trees generally fruit the second year thereafter. Good varieties imported from Australia which have fruited at Downham are Red Shanghai, Carmen, Gros Mignon and Emma. The peach winters from October to February, and should be pruned and sprayed in January; it requires root-pruning if making gross growth, and a good dressing of old lime lightly pricked in is advisable. The roots should never be allowed to get dust-dry or the trees will shed their buds. The early varieties blossom in February and fruit in May-June. Peach 'curl' seems to be the only disease the tree suffers from, and the best remedy for this is to pick and burn the affected leaves and spray the branches with Bordeaux mixture.

Nectarines. Nectarines grow and fruit well. They like the same conditions as peaches, but being more vigorous require summer pinching.

Apricots. Apricots seem only to have been grown in a very small way hitherto. Those at Coonoor and Kótagiri are seedlings of the

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Afghan variety, a very poor kind which is generally brought round for sale in the dried state.

The varieties that do best at Downham are the Moorpark and Mansfield Seedling, both imported from Australia. Elruge also promises well. The trees winter from December to February and then burst into a mass of blossom. This sets well, but the fruit ripens just when the south-west monsoon begins, and so is very liable to split. It is advisable, therefore, to force the trees to blossom as early as possible. They would probably do better in warm localities away from the effects of the monsoon, such as Kótagiri and Coonoor.

Plums.

The plum is one of the hardiest and most easily grown of the stone fruits, and thrives well in Coonoor and Kótagiri. Mr. C. Gray had a very fine orchard of Black Aloocha and (?) Victoria plums at the hotel at the former place some ten years ago, the branches being ropes of fruit and having to be supported owing to the weight of the crop. The trees are readily raised from seed but the fruit of these can never be depended upon ; so when a seedling proves a good one the best plan is to propagate it by budding on the peach, which is the best stock for all plums on the Nilgiris.

The plum winters only for about a month or six weeks in November and December and is generally a sheet of blossom in January. It requires but little pruning, and this should be done in November. A good dressing of burnt refuse, old mortar refuse, and well-rotted manure spread over the roots and lightly pricked in will enable the tree to set its blossom, and the fruit is much improved by being thinned when it is the size of a pea. At Downham are several well-grown varieties of the Japanese plum which seem quite acclimatized and promise well. Their fruit is very large, semi-transparent, and has a very small stone. The tree takes a year or two to accustom itself to the change of season, but then flowers and fruits well. Plants grafted on the peach stock do better than those on the plum which the Japanese use. The best varieties are Botankyo, Shiro, Satsuma and Sultan. The Prunus Pisardi is a very handsome tree, the foliage being a rich purple ; but the fruit is not particularly good, being small though sweet.

Persimmon.

The persimmon or date plum grows well. It has been raised by General Morgan and Sir Frederick Price, and the former exhibited some very fine fruit about six years ago. The trees at Downham, which were imported direct from Japan, are too young to fruit yet but are promising well. The best and most vigorous variety is the Daidai Maru. This winters between September and October and begins to grow again in December.

A large cherry tree some 35 years old, which blossoms and fruits every year, grows in Captain Frend's orchard at Snowdon, but the fruit is poor, and owing to its situation the tree has been much knocked about by the wind. The Himalayan cherry, or Prunus Puddum, is common in Coonoor and on several estates, but its small fruit is extremely acid. It is however an excellent stock on which to bud or graft the better English cherry. This has been done at Downham, where trees of the Early Rivers and Bigarreau Napoleon, imported from Australia, are growing. In Ootacamund, at Walpole House, is a Bigarreau Napoleon which fruits every year in May. Cherries.

Messrs. George Oakes and Charles Gray imported in February 1906 one hundred plants of the famous Japanese flowering cherry. These have been planted at Downham, Walpole House, Whitmore, and Orchardene near Coonoor and seem to have taken kindly to their new surroundings. The tree does not fruit, but is grown for its sheets of blossom in the spring and its scarlet and gold leaves in autumn.

Currants have been but little grown. General Baker tried the red variety at Tudor Hall and it produced and ripened fruit; Mr. Oakes also grew some bushes, but they did not fruit and after about three years died out. The black Naples variety was imported by Mr. Oakes, did fairly well and was increased from cuttings; and a dozen plants imported from Australia in 1906 promise to do better. They winter from December to February and fruit in May. The white Dutch kind has not been tried. Currants.

Gooseberries have been imported from time to time but have not been a success. Mr. Oakes obtained a dozen plants from England in 1900 which are still alive and make a growth of some six inches a year; but though they bloom the blossom so far has not set. Fruit has been grown by Mr. Proudlock, Curator of the Government Botanic Gardens, but the climate is too mild for gooseberries to do really well. Gooseberries.

Raspberries seem to have been imported many years ago, and one of the red kinds is fairly plentiful in Ootacamund and increases rapidly from suckers. It succeeds best in rows, and should be planted in a trench $1\frac{1}{2}$ ft. deep filled with a good compost of burnt earth, old mortar, and a fair proportion of well-rotted manure. The old canes should be cut out after they have fruited and three or four new ones from each stool allowed to grow in their place, the younger and smaller shoots, and those growing out of line, being repressed. The canes may be supported by being lightly tied to a wire stretched on posts. They should not be topped. Raspberries.

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There are three indigenous raspberries on the hills; namely *Rubus rugosus* (now known as *R. moluccanus*), *R. gowreephul* (now *R. ellipticus*) and *R. lasiocarpus*. The fruit of this last is the best flavoured and most plentiful of the three; that of *R. gowreephul* is yellow and insipid, and that of *R. rugosus*, though large, cannot compare in flavour with that of *lasiocarpus*. Mr. Oakes imported from England the American variety of blackberry known as the Wilson Junior. This grew and fruited well at Downham, but not at Ootacamund. He also obtained from Australia the Lawton blackberry, which does well at Downham. Both varieties have a very large black fruit. They are not attacked by any disease but are much troubled by the borer and have to be netted to keep off the birds. *R. Hookerii* also grows well at Downham, but the canes are not old enough to fruit yet.

Strawberries.

Strawberries have always been largely grown on the hills, and do admirably at the higher elevations. General Baker, Sir Frederick Price and the late Colonel De Montmorency have been very successful with them. They fruit more or less all the year round, but the principal season is April and May. They are propagated from runners or by division, and these should be taken from plants reserved for the purpose and from which all blossom has been pinched off. Strawberries prefer a stiffish soil, with a good proportion of well-rotted stable manure. With a light soil cow-manure is better. The beds should be deeply trenched (two feet if possible), well manured, and renewed every second year in fresh ground. The strawberry is nearly blight-proof, and apparently its only disease is the leaf-spot caused by a fungus, the remedy for which is to spray the plants with vermorite or to dust sulphur over them in the early morning before the dew has evaporated. The grubs of the cockchafer attack the roots and should be picked out by pricking over the beds to the depth of three or four inches. The Laxton is the only variety the name of which seems to have been preserved, and this does well at Downham. The Alpine variety has been grown at Coonoor with much success.

Mulberries.

Mulberries appear to have been introduced into the Nilgiris many years ago, and both the white and black varieties do well at any elevation above 4,000 ft. When once established they require but little cultivation and bear freely. The white was introduced for the purpose of feeding silkworms; the black is grown for its fruit, and some fine specimens, which bear abundantly, may be seen in the Government gardens at Ootacamund. Mr. Oakes has a dozen trees of the black variety at Downham and Mr. Gray has several specimens of both kinds at Coonoor.

Figs. Figs will not ripen on the higher elevations, but do well at Coonoor, Kótagiri and Kalhatti. The best varieties are the white Adriatic, Brunswick, Brown Turkey and Brown Genoa. The trees require to have their roots restricted or they make a gross growth and yield but little ; and before the fruit ripens the trees must be carefully netted. Figs are among the easiest fruit trees to grow in pots. They are particularly hardy and apparently are not attacked by any disease. Trees imported from Australia bear a year after planting and are easily propagated from cuttings.

Vines. Both white and purple grapes were introduced from Bangalore and England very soon after the first Europeans settled on the hills. Mr. John Davison of Coonoor grew both very successfully. The vine winters in July, August and September, and begins to make new growth in December. It requires a well-made border with free drainage, and a good compost of turfy loam mixed with half-inch pieces of bone and, if available, some old mortar refuse. Pruning and pinching must be carefully attended to, or the vine will not bear. The winter pruning must be done as soon as the leaves are down, only two or three eyes of the new wood being left. When the blossom has set, the laterals should be stopped to three leaves beyond the bunch and sublaterals to one leaf. At Downham there are specimens of the Gros Colmar, Camden Sherry, Black Malaga and the Catawba. Mr. Gray has a good vinery at Coonoor.

Guavas. The only variety of guava that does well is the *Psidium Cattleianum*, a native of Brazil giving a very dark purple fruit about 1½ inch in diameter which has a pleasant subacid flavour but is generally used for making preserves. It is easily raised from seed and requires but little cultivation.

Oranges and lemons. Oranges will not thrive on the plateau, but there are few coffee estates which have not round their bungalows some trees raised from pips. The flavour of the fruit is not usually good, and of late years efforts have been made to introduce better varieties. In 1905 Mr. Gray imported plants of the Navel, Maltese Blood, St. Michael, Seville and other kinds, which are doing well but are too young to bear yet. Mr. Oakes also imported the two first-named in 1904 and is growing them at Kalhatti. Lemons and limes thrive at elevations of from 4,000 to 6,000 feet. The Metford and Spanish lemons are very prolific and come fairly true from seed. A large variety of lime known as the Maltese is often met with on coffee estates. It gives a large quantity of juice, and the peel makes a marmalade of

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good flavour. The shaddock (pomelo) is also grown to a certain extent, but the fruit is of indifferent quality. The seedlings however are an excellent stock on which to graft or bud the better known varieties of oranges. The trees of all the citrus family are attacked by the brown scale (*Lecanium hemisphericum*) and canker. The best remedy for the former is the resin wash mentioned in Mr. Maxwell Lefroy's recent work on insect pests.

The citron is found on many coffee estates, but as there seems little or no demand for the fruit its cultivation has not extended.

Cherimoyer.

The delicious cherimoyer (*Anona cherimolier*) was introduced to the Nilgiris by Mr. Clements Markham and planted at the Kalhatti garden referred to below. The trees there appear to have died out, and we hear nothing more of this fruit until about 1890, when Mr. A. G. Nicholson reintroduced it to these hills from Yercaud, whither the late Surgeon-General Shortt had brought it from South America. The tree thrives and fruits well at all elevations between 4,500 and 6,500 ft., is easily raised from seed, quickly responds to a little care and cultivation, and bears in the third or fourth year from seed.

Nuts.

The Spanish Chestnut (*Castanea vesca*) grows well at the higher elevations and has fruited well at Paikára and Ootacamund. It has always been raised from seed. A new variety called the Mammoth (grafted) was imported last year by Messrs. Gray & Oakes but the trees have not been planted long enough to enable the quality of their fruit to be tested. The small-fruited Japanese chestnut was introduced by Sir Frederick Price and appears to be quite acclimatized. Mr. Oakes has several specimens at Downham.

The walnut is quite established and fruits satisfactorily. At Cluny Hall are some very large trees which appear to be about 40 or 50 years old. The best variety seems to be the thin-shelled kind from Burma (Bhamo), which grows very rapidly.

Bee-keeping.

Several kinds of bees are native to the hills, but none of them are any good as producers of honey. Having no long winter to live through, as English bees have, they do not store any appreciable surplus stock. Mr. Oakes hived the *Apis indica* for some years in modern frame hives, partly to fertilize fruit blossom in his orchard, but the yield of surplus honey was insignificant and rarely amounted to 10 lb. per annum per stock. Sections were tried but were never occupied by the bees. The *Apis dorsata* has also been hived, but never remains more than a month or two and then migrates. It is a useless variety and at times very vicious. It forms large colonies, generally on lofty blue gum

branches from the under side of which it builds big single combs. As many as twenty have been counted on one tree. It seems to leave the higher ranges when the south-west monsoon sets in. Another very small bee builds on the branches of low-growing shrubs and after swarming leaves the old comb. The combs are seldom larger than a cricket ball and are built of very fine white wax. The honey is almost white and of very delicate flavour. This variety seems most plentiful on the slopes of the hills, and is not often seen on the plateau.

English, or rather the Punic strain of European, bees, were first introduced in January 1903 by Major G. de Heriez Smith of the Central India Horse and Mr. George Oakes. By a curious coincidence they both (unknown to each other) ordered the nuclei from the same dealer and introduced the same variety.

Some two or three years before this Mr. Nicholson of Hallikarai estate, Coonoor, had tried Italian bees, but without success.

Both the nuclei of Punic bees were brought out by friends of the importers by Brindisi and Bombay with the mails, and were eighteen days on the journey. They were allowed a cleansing flight at Port Said, Aden and Bombay and were then sent on to Ootacamund by mail train. Three frames of brood and one frame of heather honey, with about a quart of bees and a queen, made each nucleus, and ventilation was given by an opening covered with wire gauze. On their arrival a number of worker bees were found dead owing to heat and being knocked about, but a good proportion of them and both queens were in excellent condition. They were at once put into modern hives, and on being fed the queens at once began laying. In two months the bees had increased to the full extent of the hives, and on the 20th of July the first swarm was thrown off and the apiary very soon increased from two stocks to twenty.

In May, racks of sections were put on the stronger stocks and were rapidly filled and capped, proving that there is abundance of bee fodder. The honey was a very good light colour and well flavoured. Some of it was sent to England and favourably reported on there. The results for 1903–04 were 588 lb. run honey and 134 sections, but afterwards the stocks began to fail, and though the bees were frequently fed no swarms were thrown off in 1905 and some of the stocks gradually died out. In 1906 only four stocks were left, and though drones were hatched in all the hives there were no swarms, and thus it was impossible to re-queen —the only hope of re-building the apiary. Attempts were made

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to import queens by post, as is done in America and Europe, but the dealers said the journey would be too long for the queens to survive.

Owing to the lively fear which most people have of bees, it has been found impossible to get any one to bring out fresh nuclei, and the necessity of the bees being allowed a cleansing flight prevents their being shipped unaccompanied. They must be brought out by some one who is not too timid to open the hive at the ports above mentioned. If this can be done, there is no other trouble; no cleaning, feeding or watering, and the nucleus can be hung up in a cabin like an ordinary birdcage.

Imported bees must be kept warm on the Nilgiris. A good blanket quilt of double thickness and weather-proof hives are necessary. The best aspect is east, with a hedge or building to the west. Then the morning sun warms the bees and induces them to work early, and they are shielded from the hot afternoon sun and the force of the south-west monsoon. Unless stocks have a sufficiency of natural stores, which can easily be ascertained by taking out a few frames now and then, feeding is advisable from November to February. The queen in this country lays all the year round, but chiefly in March, April and May. It is advisable to re-queen every second year and to provide queens for the purpose.

It is difficult to say, in such a land of flowers, which is the chief source of the honey; but the eucalyptus yields a great deal, and also the many hedges of heliotrope and principia. Many of the wild flowers seem to give nectar, and the Chapman honey-plant (*Echinops spherecephalus*, known in England as the Globe thistle) yields largely. The garden poppy is very largely drawn upon for its pollen.

GOVERNMENT FARMS AND GARDENS.

The earliest action taken by Government to encourage horticulture or agriculture on the hills was the leasing from 1827 to 1834 of Stonehouse and the garden laid out there by Mr. Sullivan (who was the pioneer of all enterprize in this direction) and the purchase in December 1829, along with his house Bishopsdown (then called Southdowns), of the other garden he had made round about this latter residence. A European gardener was put in charge of each of them; but they appear to have been rather ornamental than useful.[1]

The Kéti farm.

In April 1830 the then Governor, Mr. Stephen Lushington, wrote a long minute on the desirability of horticultural and

[1] See Sir Frederick Price's book.

agricultural improvements and an experimental farm was started forthwith at Kéti. This and the two gardens above mentioned were placed under the care of Major Crewe, Assistant Commissary-General on the Nilgiris. Most ambitious schemes were contemplated : a large stock of tools, including four ploughs, was ordered from the Arsenal at Madras; six cast artillery horses to draw the ploughs were indented for; the Court of Directors was asked to send out a large quantity of agricultural and garden seeds and fruit trees; an indent for fruit trees and vegetable and flower seeds from Persia was sent to the Government of Bombay; and cattle for dairy and draught purposes were ordered up.

It was known that the climate of the plateau was delightful and it was believed that its soils were much more fertile than they really are; and it was in consequence confidently hoped that with Government assistance and encouragement permanent settlements of English and Eurasian farmers and mechanics might be established on the plateau, and that the Nilgiris might become a British colony as flourishing as Australia or the Cape.[1]

By 1832,[2] under Major Crewe's superintendence, fields at Kéti had been broken up in the English fashion with English ploughs; potatoes, wheat, oats and barley had been put down on about 150 acres; some plots had been laid out as gardens; buildings had been erected; Rs. 2,000 had been realized from the sale of produce and seeds; and three families of Eurasians had settled on the hills and been aided from the farm, and six more were desirous of imitating them. The Directors, however, poured cold water on the whole scheme, and even refused to comply with the indent for fruit trees and seeds. In 1836 the land belonging to the farm was restored to the Badagas from whom (by rather high-handed methods) it had been taken and only the buildings and the gardens adjoining them were retained. The subsequent fate of these is sketched in the account of Kéti on p. 331 below. Thus ended the first and last effort by Government to establish a model farm on the Nilgiris.

In his survey report of 1847 on the hills Major Ouchterlony urged the establishment of a farm on the plateau—more especially for the growth of wheat and barley, which latter he wished to see improved sufficiently to render brewing profitable. He recommended two alternative sites (the elevated tract west of the

[1] See, for example, Hough's *Letters on the Neilgherries,* 137; Jervis' book, 20; and Major Crewe's outline plan for a settlement on p. 121 of the first edition of Baikie.

[2] E.M.C., Military Department, dated 5th October 1832.

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Paikára from Naduvattam to Múkarti Peak, and Kódanád in the north-east corner of the plateau) and urged that English settlers on the Nilgiris would be far better off than 'the many hundreds of their unfortunate fellow-countrymen who have hurried heedlessly out to the Australian colonies, only to meet with disappointment and ruin.' He considered that they would find an excellent market for English crops, butter and eggs, and fresh and salted meat (the latter for the shipping) and pointed out that they would have a great advantage in the cheapness of native labour—coolies being then paid only two annas a day, or less than half the present rate. He further argued that the planting of trees for firewood (then unheard of) would soon be profitable; but discouraged the silkworm culture which had been tried at Coonoor, Billikal (see p. 349) and other places without much success.

No action was taken by Government on this part of his report. In the seventies, when the Saidapet farm was established and schemes were afoot for starting experimental farms in various parts of the Presidency, the re-awakened interest in matters agricultural led to the opening of a model farm at the Lawrence Asylum, and to the despatch of Mr. Robertson, Superintendent at Saidapet, to the Nilgiris to report on the capabilities of that country. The idea of colonizing the hills was not yet entirely dead; in suggesting Mr. Robertson's deputation to the hills Lord Napier wrote in 1871:—

'Much of the good land on the warm side of the Hills is subject to the rights of native cultivators; the cost of building is excessive; the price of labour is high; clothing is dear; medical attendance and education would be costly and difficult of access; the sale of grain crops, fruits, and vegetables would offer little money remuneration compared to the wants even of a humble European family; the returns of tea and coffee cultivation are slow and liable to great fluctuations. A poor man would find it difficult to establish and maintain himself; a richer man would prefer to go elsewhere. My own impressions are decidedly unfavourable to the Hills as a scene of agricultural settlement for Englishmen; but I think it would tend to the correction of erroneous impressions and to the formation of sound opinions that this question should be illustrated by the report of a person of unquestionable judgment and practical knowledge in such matters.'

Mr Robertson, however, was not at all hopeful of success and no definite action followed his report.

The Government Gardens, Ootacamund.

The Government Gardens at Ootacamund began life in 1845 as a kitchen garden started by subscription among the European residents and designed to supply them with vegetables at reasonable cost. Their history is detailed in Sir Frederick Price's book.

In 1847 money was raised to improve them into a Public Garden and form a Horticultural Society. The then Governor of Madras, the Marquis of Tweeddale, took much interest in the project; subscribed Rs. 1,000; and persuaded the Directors to send out Mr. W. G. McIvor, a scientific and practical gardener trained at Kew, to take charge of matters. He arrived in 1848; and Government sanctioned Rs. 100 per mensem in support of the Gardens and appointed a committee to manage them. At that time the site of the present Gardens was in a very primitive state: 'the upper portion was a forest, with heavy trees on its steep and rugged banks, the lower part was a swamp, the whole being traversed by deep ravines.' The upper portion, 'where sambhar, jungle-sheep, sometimes a bear and numbers of jungle-fowl were to be found' in former times, was first improved; and in 1851 the lower part was purchased and added to it. The swamp there was reclaimed, the ravines were filled up with silt shovelled into the streams which poured down the hill side, and at length Mr. McIvor's taste and judgment resulted in the formation of one of the most beautiful Public Gardens in India. Much of his success is 'due to the happy manner in which advantage has been taken of the picturesque lay of the land and of the trees and rocks with which it abounds. Bits of fine old shóla still nestle undisturbed in nooks and corners of the grounds, though they are now connected by gravel paths and grassy slopes intersected by beds of flowers.' The ornamental pond and the parterre round it were made between 1864 and 1867.

Differences between Mr. McIvor and his committee led to the latter's supersession in 1853 by a smaller body, consisting of the Collector, the Officer Commanding Ootacamund and the Senior Medical Officer, which exercised a less direct control; in 1857 the Gardens were placed under the superintendence of the Conservator of Forests; in 1860 Mr. McIvor was in addition put in charge of the cinchona plantations and in 1868 he was given a Deputy, Mr. Jamieson, to assist him; in 1871 the latter took entire charge of the Gardens; in 1883 the Government Parks and Gardens on the Nilgiris were put under the Mr. Lawson already mentioned, who had just arrived as Government Botanist and Director of the Cinchona Plantations (subject to the general control of the Commissioner of the Nilgiris); and this arrangement continued until 1896, when (as above stated) these two posts were separated and the Parks and Gardens were placed under the Collector's control and managed by a trained horticulturist designated the Curator.

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GOVERNMENT FARMS AND GARDENS.

In 1878 a medicinal garden, five acres in extent, was formed at the head of the Gardens at the suggestion of the Surgeon-General, the plants grown wherein included ipecacuanha, jalap, rhubarb, peppermint, digitalis and taraxacum.

The Kalhatti branch garden.

About 1855 Mr. McIvor opened a small branch garden of about five acres just above the Kalhatti falls on the Sigúr ghát for the cultivation of plants requiring a warmer climate and lower elevation than those of Ootacamund. Sir (then Mr.) Clements Markham, who visited it in 1860, says that it then contained "oranges of many kinds, shaddocks, lemons, limes, citrons, nutmegs, loquats and plantains. On this spot the delicious Chirimoyas, the seeds of which we brought from Peru, will hereafter ripen and enable the people of India to taste 'the masterpiece of nature.'" Mr. McIvor's reports show that, in addition to the above trees, apples, pears, plums, peaches, figs, mulberries, raspberries, nectarines, apricots, vines, filberts, currants, strawberries and pine-apples (in all 178 species and varieties) were being tried in 1859 in the garden, which, he claimed, then possessed the most extensive stock of such fruit in all India.

Subsequently the garden attracted less and less interest and eventually in October 1887 the land was sold in public auction, it being considered that the climate of Kalhatti was so similar to that of Coonoor that it was unnecessary to keep up a separate garden in the former.

The Coonoor branch garden.

A branch garden had been established in Coonoor in 1857 for raising vegetable seeds and English fruit trees. It was sold in 1873, the year before Sim's Park there was taken over.

Sim's Park, Coonoor.

Sim's Park was so named after Mr. J. D. Sim, C.S.I., who had taken much interest in laying it out. It was begun in 1874 and was taken over by Government in December of that year It lies in a beautiful little ravine which contains some admirable patches of natural shóla and has been considered to be even more picturesque than the Ootacamund Gardens. At the bottom of the ravine a small stream has been dammed up to form a miniature lake.

The Barliyár Garden.

In 1870 Government purchased for Rs. 2,000 the Garden at Barliyár, 7½ miles from Coonoor down the ghát road and 2,300 to 2,500 feet above the sea. This had been originally formed by Mr. E. B. Thomas when he was Collector of Coimbatore and the Nilgiris (1851–58) and by 1857 [1] already contained a large collection of tropical and sub-tropical fruit trees and plants, some

[1] Dr. Cleghorn's note in M.J.L.S., xviii, 303.

of them of rarity and value. When it came into the market in 1870 Messrs. McIvor and Jamieson strongly recommended its purchase, partly in order to try ipecacuanha there, and their suggestion was approved. It now covers about eight acres and the trees and plants thriving in it include several kinds of rubber, mangosteen, nutmeg, cinnamon, clove, allspice, cocoa, mahogany, camphor, breadfruit, litchi, langsat and durian. The fruit raised in the garden is sold to the public and of late years some income has also been made by the sale of rubber plants and seeds.

The present Government Gardens and Parks.

The Government Gardens and Parks in charge of the Curator now include, at Ootacamund, the Botanical Gardens, the Government House Garden adjoining, and sundry pieces of public land in the station which require to be kept in an ornamental condition; at Coonoor, Sim's Park; at Barliyár the Gardens above mentioned; a small nursery at Benhope, on the Coonoor ghát and about 2,800 feet in elevation, which was taken over from the Forest department in 1902; and a block of about ten acres near Kallár, at the foot of the same ghát and about 1,300 feet above the sea, which was taken over from the Forest department in 1900 and is used for experiments with rubber trees and fibre-producing plants.

CHAPTER V.

FORESTS.

WOODS ON THE PLATEAU—Their nature—Destruction in early days—First conservation—Dr. Cleghorn's suggestions, 1858—Rules for their protection, 1860—Their transfer to the Commissioner, 1868—Re-transfer to the Forest department, 1875—Reservation under the Forest Act—Tóda patta lands—Present system in the plateau woodlands. ARTIFICIAL FIREWOOD PLANTATIONS—First introduction of Australian trees—The first Government plantations—The existing plantations—Their chief enemies. DECIDUOUS FORESTS OF THE NORTHERN SLOPES—Growth in the Moyár valley—Sandalwood plantation. DECIDUOUS FORESTS OF THE WYNAAD—Benne forest—Teak plantation—Mudumalai forest—Teak plantation there.

CHAP. V. WOODS ON THE PLATEAU.

THE forests of the district may be divided into four classes; namely, the evergreen woods (shólas) on the plateau, the artificial plantations (for firewood) of Australian trees round the stations there, the deciduous forests of the northern slopes including the Moyár valley, and the forests of the Wynaad, which are also deciduous but are far heavier and more dense than the last. The trees characteristic of each of these tracts have already (pp. 20–26) been briefly mentioned. The growth on the top of the plateau and along its upper edges is the only forest which is really evergreen. The greater part of the eastern and southern slopes of the plateau is included in the Coimbatore district and the forests there thus need no detailed mention here.

Their nature.

The first of the above four classes, the shólas on the plateau, are not of any great importance from a commercial point of view, as the trees in them are slow-growing varieties (largely Eugenias and rhododendron) which produce timber of little or no value and probably take at least a century to mature; but they add greatly to the beauty of the country and are of immense use in protecting sources of water-supply.

Destruction in early days.

There can be little doubt that throughout the country now occupied by the Badagas these shólas were formerly far more numerous and extensive than at present, and that the Badagas had done immense destruction among them even before the first Europeans came to the hills. The frequency of the existence of the suffix *kád*, meaning jungle or forest, to the names of places where, though the soil is particularly suitable for the growth of timber, hardly a tree is now to be found, is one evidence of this; and another is the way in which, in many otherwise almost bare

localities, a few great shóla trees have survived the general destruction because they were considered to be holy or the homes of the unseen genii of the place. CHAP. V. WOODS ON THE PLATEAU.

Even after the British occupation of the plateau this denudation was not at once checked. As is mentioned on p. 268 below, a Badaga was then allowed to occupy a tract five or even ten times greater than that for which he actually paid assessment; and 'grazing pattas' were also allowed under which a ryot could hold grass land up to one-fifth of his regular holding at one-quarter of the ordinary rate of assessment; while in the Kundahs there were plough and hoe leases under which a ryot could cultivate any land he chose on payment of the assessment for the number of ploughs or hoes he used.

The destruction which resulted from these lax systems was immense: except at Bikkapattimand there is now not a shóla worth mention all along the north side of the plateau from Marlimand to Kódanád, an area of about 75 square miles; and even the Orange Valley, once (see p. 8) famous for its groves of wild oranges and limes, has been so stripped of its growth that most of its rich soil has been washed down to the plains. A Collector of experience described as under the results which had ensued:—

'They (the Badagas) have systematically destroyed every tree in the neighbourhood of their villages and for miles around, leaving nothing standing for their requirements but stunted shrubs such as *Dodonæa*, *Berberis*, *Carissa*, etc. This has brought its own punishment, for the Badagas have to travel miles to obtain timber and fuel. The manure that is so necessary for their impoverished lands is now extensively used for burning bricks and tiles; and for want of protection the monsoon gales sweep over the fields unchecked, to the great detriment of the crops. The ground is parched in the dry weather and there is no grass for the cattle, which the owners are compelled to drive into the malarious forests below, where the herdsmen get fever and the cattle are killed by tigers. The villages also suffer from scarcity of water in the hot weather, owing to exhaustion of the springs in the ravines which have been denuded of trees.'

He might have added that many streams which were once perennial are now, owing to the absence of forests which might absorb rainfall, quite dry one day and raging torrents the next, and that the amount of scour they occasion when in these sudden floods is a danger to cultivation, roads and bridges.

This description applies to the Badaga country proper—in the east and north-east of the plateau and round about Kílkundah. Probably the grass land to the west of Ootacamund and on the Kundahs was never covered with forest (though there are signs

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that the shólas were bigger than now) for its soil, with its thick underlying stratum of cold gravelly clay, is scarcely suited to timber.

First conservation.

When Europeans first settled on the plateau the great demand for firewood and building material resulted in much reckless felling of the shólas near Ootacamund and Coonoor, and Government made early efforts to check the mischief. They inserted a clause in the title-deeds of land granted by them requiring the grantee to plant a sapling for every tree he felled ; and in 1837 they directed that in future no trees should be cut down within the military limits of Ootacamund without special sanction, which sanction was never to be granted unless the trees were neither ornamental nor useful as protectors of springs.

Neither rule did much good, apparently ; and about 1852 a Conservancy establishment of a Forester and six peons was sanctioned. Mr. E. B. Thomas, a great lover of trees, was now Collector of Coimbatore (in which the Nilgiris was at the time included) and it was largely due to his efforts that the destruction was somewhat checked. In a report of 1858 on the hill woodlands Dr. Cleghorn, the first Conservator of Forests, wrote of him—

'He has earnestly and unceasingly exercised a personal supervision of the woods around Ootacamund when he visited the Nilgiris, and has manifested a warm interest in the progress of this department as evinced by the establishment of his private garden at Barliyár, which has been productive of much good in disseminating fruit and other trees. I do not hesitate to affirm with truth that but for his continued exertions the neighbourhood of Ootacamund would have been denuded of its remaining beautiful shólas long since.'

Dr. Cleghorn's suggestions, 1858.

Dr. Cleghorn suggested that matters should be improved by appointing a European Forester, limiting the amount of felling allowed, planting quick-growing trees to replace those cut down, encouraging the use of peat for fuel, and forming plantations at Ootacamund and Wellington and avenues along the main lines of roads. Government directed him and Mr. Thomas to draw up rules for the conservancy of the woodlands and sanctioned a grant for the proposed planting at Ootacamund ; but further than this they did not go.

Towards the close of 1859 Mr. Thomas again drew their attention to the urgency of the matter, especially round the stations. People were still allowed to fell trees where and when they chose in Government shólas without payment, and thus the most powerful incentive to private planting for firewood (which had now, see below, begun) was lost.

Sir Charles Trevelyan's Government again consulted the Conservator and then passed a series of rules and regulations which, if only they had been enforced, would have been ample to protect the shólas from further depredations. It was ordered, for example, that the whole of the woods round Ootacamund should be absolutely reserved, no wood-cutters being allowed inside them and the vacant spaces in them being planted up ; and that certain shólas at a distance from the station should be felled in rotation to supply the current demand and afterwards planted up again by the Conservancy department.

Rules for their protection, 1860.

These rules were also to be applied, so far as might be necessary, to the shólas at and round Coonoor. An additional Forester was sanctioned ; an overseer was appointed for Coonoor ; and not long afterwards Major (now General) Morgan, Deputy Conservator of Forests, was placed in charge of the Nilgiri shólas and plantations, and also of the Mudumalai and other forests in Wynaad.

Their transfer to the Commissioner, 1868.

Protection, however, continued to be ineffectual ; and in 1868 Mr. Breeks, who had recently been appointed Commissioner of the district, said ' Day by day I feel more satisfied that, unless conservancy is taken in hand and organized on some efficient footing under the control of an experienced officer, the destruction of the surrounding shólas is but a question of time.'

From 1st April 1869 the Government sanctioned the transfer of the woods and plantations on the plateau to the Commissioner's care, the Jungle Conservancy Rules being introduced into them ; and in September of the same year the late Major Jago, attached to the Wellington dépôt, was put in direct charge of them under the Commissioner's control.

Re-transfer to the Forest department, 1875.

In 1875, the woods were retransferred to the Forest department, under the care of which they have ever since remained.

But the destruction of the woodlands round the stations which had come into private hands either by purchase from the Badagas or by sales under the Waste Land Rules went on as before; and in January 1878 a commission was appointed to report what forests might be regularly reserved. Eventually Government decided in 1880 to reserve strictly the whole of the woods remaining on the plateau, which by now, except on the west, were of small extent.

Reservation under the Forest Act.

But no demarcation of these woods on the ground was provided for, their boundaries being merely marked on the maps ; and when, in 1882, the Forest Act was introduced, the selection, mapping and demarcation of the reserves had for the most part to be done afresh.

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This work has now been systematically completed throughout the district and the reserved forests in the Nilgiris at present include practically the whole of the slopes of the plateau so far as they are included in the district; the stretch of land between the plateau's northern crest and the Moyár river; such scattered blocks of isolated forest on the top of the eastern half of the plateau as have escaped destruction by Badagas and those who opened coffee and tea estates; and (the most noteworthy stretch of all) practically the whole of the country (excluding a few patches of cultivation and estates) between Ootacamund and the western edge of the plateau, comprising the Kundah range and the 30 square miles of the lately-reserved 'Wenlock Downs.'

In the case of the Kundahs and the Downs an exception to the usual forest rules was made, after much discussion, in 1905 in that the annual burning of the grass was permitted. These areas are chiefly of value as great grazing-grounds; and it was considered that burning was essential to the production of the young green grass so desired by the graziers and did no appreciable harm to the shólas as long as it was done early in the year while the undergrowth and bracken in and round them was still green and if precautions were taken to prevent the fire from spreading to any inflammable growth which ran up into them.

The figures in the margin show the extents now finally protected. The percentage of the area of Gúdalúr taluk (an almost unbroken sea of jungle) which is reserved is small because so much of the land there has been declared to be private janmam property.

Taluk.	Area of reserves in square miles.	Percentage to total area of taluk.
Coonoor ...	74	31
Ootacamund ..	300	68
Gúdalúr ...	30	11
Total ...	404	42

Tóda patta lands.

Besides the reserves proper on the plateau, the Forest department also controls the allotments of land which (see p. 272) were made to the various Tóda mands in 1843 and 1863 and confirmed at the last settlement. These allotments consist largely of woodland and were intended to provide the Tódas with a certain extent of inalienable grazing-ground round about their dwellings. Difficulty, however, was from the first experienced in preventing them from sub-leasing the land to market-gardeners and others to be broken up for the cultivation of potatoes or other vegetables; and in 1882 it was found necessary to direct that a heavy penal assessment

should be imposed on any land so alienated. These Tóda reservations often march with the Government forests and in the aggregate they comprise a considerable extent of forest. They are accordingly now controlled by rules framed under section 26 of the Forest Act which, while they protect the Tódas in the exercise of their ancient privileges—allowing them to graze their buffaloes free, to take fuel and grass for their domestic requirements, to receive free permits to remove timber, bamboos, etc. for repairing their mands or temples, and even (though the privilege is never exercised) to cultivate—yet prevent other classes of people from molesting these patches of forest. The Tódas are also allowed free grazing for their buffaloes in the other reserves—a concession allowed to no others.

CHAP. V. WOODS ON THE PLATEAU.

Present system in the plateau woodlands.

The woods on the plateau itself are now strictly conserved and no felling of any kind is permitted in them. Dead wood is removed, however, and grass and bracken are allowed to be cut on permit on the usual system. Cattle-grazing is also permitted on payment of fees in all the shólas except a few in the immediate neighbourhood of the stations in the case of which special reasons (such as the necessity of protecting water-supply from pollution) exist for excluding cattle.

ARTIFICIAL FIREWOOD PLANTATIONS.

The Government's efforts to preserve the woodlands have been immensely furthered by the extensive planting of Australian trees for firewood which has been undertaken officially and by private agency. These plantations form the second of the four classes of forests in the district above referred to.

First introduction of Australian trees.

The Australian blackwood (*Acacia melanoxylon*) and wattle (*A. dealbata*) were first introduced about 1832, and Sir Frederick Price considers that they were brought over from Tasmania by the Captain Dun whose name has already (p. 116) been mentioned. The blue gum (*Eucalyptus globulus*) was first introduced in 1843, in which year (says Sir Frederick) Captain F. Cotton of the Madras Engineers planted in the grounds of Gayton Park at Ootacamund a tree of that species which is still standing and is now upwards of 150 feet high. Four others which he put down shortly afterwards at Woodcot are also still in existence, and three of these are even bigger than that at Gayton Park. The most rapidly growing forest trees in Europe would not attain these dimensions in less than 150 years.

In 1853 the systematic planting of blackwood and wattle was begun in the neighbourhood of Wellington, but it was not until 1856 that Captain (now General) Morgan imported a quantity of blue gum seed from Australia, set to work to sow some of it on a

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definite plan on the Tudor Hall estate, and distributed the rest among the settlers on the hills. Even by 1857 blackwood and wattle were so scarce that plants of them were sold at the Government Gardens at four annas apiece, while blue gum plants fetched as much as twelve annas. These three trees have since then altered the whole appearance of the Nilgiri hill-stations, and acres of land which appear in the old sketches and photographs as open grass are now covered with their gloomy foliage.

They are held in little esteem as timber. The wattle grows into a dense scrub of small shoots springing up from its creeping underground suckers, and the wood of the blackwood and blue gum is said to rot rapidly when placed in the ground. Blue gum, moreover, warps greatly if sawn when green, and if left to season is stated to become difficult to work. On the other hand it may be urged in defence of both the latter timbers that in the Nilgiris they have seldom been cut from really matured trees; that seasoning in water would probably improve them; and that in Australia blue gum wood is largely used for building, fencing and railway sleepers and blackwood for furniture and the interior fittings of houses.

The first Government plantations.

The first Government plantation of Australian trees in the district was made in 1856 near Bleak House, Wellington, by Captain Campbell, Assistant Executive Engineer. It is now known as Bandy Shóla. By 1859 he had expended Rs. 10,000 and had planted with blackwood (and a few deodars and pines) 98 acres of land, on which two hundred thousand of these trees were alive.[1]

At Ootacamund, the Collector, Mr. E. B. Thomas, began planting in 1857. He put down 8,000 blackwood and blue gum trees and sowed some more in shólas which had been partially denuded. The existence of Australian trees in the heart of some of the shólas near Ootacamund (which does not add to their beauty) is due to this latter action of his.

In 1858 Government sanctioned the planting, under Mr. McIvor's superintendence, of 10,000 trees in and about Ootacamund for ornamental purposes and with the idea of encouraging tree-growing by private persons. Except about the borders of the lake, few of the trees then put down survive, and these few have been indifferently cared for. Thereafter Government fuel plantations were formed at an increasing rate. By 1869, when the forests of the plateau were put under Jungle Conservancy as

[1] Interesting information regarding this and other plantations on the hills will be found in Dr. Cleghorn's *Forests and Gardens of South India* (London, 1861), 171–88.

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ARTIFICIAL FIREWOOD PLANTATIONS.

already described, they covered 191 acres; and by 1875, when the Forest department took charge, they had grown to 919 acres. Private planting had also been found to be very profitable and had proceeded apace, and the cry to-day is not that there is any want of firewood (for trees barely pay for the felling) but that the houses in the stations are too often buried in masses of tall Australian trees which shut out light, air and the view.

The existing plantations.

The Government plantations now in existence are as under [1]:

Name.	Area.	When planted.	Species of trees.	Method of treatment, etc.
	Acs.		*Ootacamund Range.*	
Arambi ...	224	1863–65, 1875–76 and 1885–87	Blue gum, Frenela, pines and cypresses.	Part of this is one of the oldest of the plantations, 58 acres having been put down in 1863. Since 1882 the blue gum has been worked on a ten years' rotation.
Cairn Hill ...	110	1877–78	Blue gum and conifers.	Ten years' rotation from 1882.
Dharma Tope.	5·5	1876	Blue gum ...	Not worked; was put down as an experiment and to induce private planting.
Marlimand ...	12·4	1860 and 1883	Blue gum mixed with wattle.	Thinned in 1891–92. Not worked, as no demand.
Brooklands ...	22	1862	Wattle and a little blue gum.	Thinned in 1890–91. Wattle cut over twice.
Snowdon ...	14	1860	Wattle and melanoxylon.	Thinned in 1891–93.
Baikie ..	62	1874 and 1882	Blue gum and wattle.	Coppiced on a 10 years' rotation from 1884.
Madana ...	13·5	1863	Blue gum and wattle.	Do. do.
Sheffield ...	25	1862	Wattle and melanoxylon and a few blue gums.	Do. do.
Kalli ...	14	1870	Blue gum ...	Cut in 1881. Coppiced on a ten years' rotation.
Chaughát Kalli.	21	1871	Do. ...	Cut in 1889 and 1891. Coppiced on a ten years' rotation.
Ándi ...	24·5	1873	Blue gum and melanoxylon.	The blue gum was cut over in 1886. Coppiced on a ten years' rotation.
Governor's Shóla No. I	24·7	1863–72	Blue gum and wattle.	Was cut over in 1881. Coppiced on a ten years' rotation.

[1] The particulars which follow have been supplied by Mr. A. B. Jackson, District Forest Officer, who has also been kind enough to assist with other parts of this chapter.

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ARTIFICIAL FIREWOOD PLANTATIONS.

Name.	Area.	When planted.	Species of trees.	Method of treatment, etc.
	Ac.		*Ootacamund Range —cont.*	
Governor's Shóla No. II	31·5	1863–72	Blue gum ..	Was cut over in 1885 to 1887. Coppiced on a ten years' rotation.
Arnakal ...	6·4	1873	Do. ...	Cut in 1892. Coppiced on a ten years' rotation.
Huppatti ...	10·7	1870	Do. ...	Cut in 1893. Coppiced on a ten years' rotation.
Muttanád ...	75·5	1880-81	Do. ..	Not cut; was originally planted with the idea of supplying timber.
Chemmanguli.	27·8	1879	Do. ...	Worked for charcoal as demand arises.
			Coonoor Range.	
Black Bridge.	56	1874 and 1876–77	Blue gum ..	Includes the Rock Plantation. Felling began in 1896, as a demand arose for supply to the Commissariat department.
Bleak House.	57	1857	Wattle with a sprinkling of melanoxylon and blue gum.	Has been worked with Springfield as one working circle.
Springfield ...	30	...	Wattle with patches of blue gum.	Worked with Bleak House under coppice.
Bandy Shóla.	94	1856	Melanoxylon and wattle.	The earliest Government plantation. Worked as coppice under standard. Closed to grazing.
Coonoor Peak.	221	1872–73	Blue gum 206 acres and exotics 15 acres.	Blue gum worked since 1883 under a ten years' rotation as coppice under standard, changed to simple coppice during second rotation. Closed to grazing.
Teppakuchi ...	35	Not known	Blue gum ...	Not worked yet.
Rallia ...	60	1872	Blue gum and wattle.	Coppice under standard on 10 years' rotation.
Little Rallia ..	10	1872	Blue gum ...	(Coppice under standard on 10 years' rotation.)
Newman ...	35	1870–71	Do. ...	(Coppice under standard on 10 years' rotation.)

Practically the whole of them consist of blue gum. This tree is now coppiced at ten-year intervals. The system known as 'coppice with standards' was tried formerly, but it was found that the standards were of little use for timber and that their shade retarded the growth of the coppice. Such wattle as exists is also coppiced, and does well under that system. The

wood is all felled and stacked in cut lengths by the Forest department, and is sold either retail at the dépôts at Ootacamund, Coonoor or Wellington or in the plantations by the 'lot' to large purchasers who remove it at their own cost and retail it at a profit. The average annual quantity thus disposed of by the Forest department now amounts to as much as 3,500 tons of firewood valued at Rs. 11,760 and 2,600 bags of charcoal worth Rs. 1,970, and firewood costs as little as Rs. 4 per ton delivered at the door. The successful cultivation of these foreign trees has thus solved one of the most difficult of the problems which beset the foundation of the hill-stations on the Nilgiris.

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The plantations consist so largely of blue gum because that tree has proved far more satisfactory as a firewood producer than either wattle or blackwood and than the pines (chiefly *Pinus longifolia*), cypresses (mainly *Cupressus macrocarpa*) and other trees (such as *Frenela rhomboidea*) which have been tried on smaller scales round about Ootacamund. It grows admirably from coppice; whereas blackwood coppices poorly and wattle grows into a dense mass of small stems which are of little use except for small firewood. Experiments made at Dr. Brandis' suggestion in 1882 by a special officer showed that the annual increment per acre of blue gum was from 11 to 13 tons, whereas that of blackwood was only about 6 tons. Even the second of these figures, however, is far above the yield of the most productive natural forests or plantations in Europe; and the indigenous shólas of the plateau are of such exceedingly slow growth that it has been calculated that their yield is only about half a ton per acre per annum. The blue gum should not be planted near springs which are deserving of protection as it absorbs immense quantities of subsoil moisture. The leaves of the trees felled in the Government plantations are sold to a contractor who distils eucalyptus oil from them.

Their chief enemies.

The greatest enemy of the blue gum is high winds, and a shelter belt to windward is usually left when coppicing is carried out. The worst foes of the blackwood are the loranthaceous misletoe-like parasites which abound on the hills and attack numerous varieties of trees and plants from the small St. John's wort up to the largest forest timber. The seeds of these pests are coated with an extremely tenacious gum, and being carried from tree to tree by birds, which are very fond of them, adhere to the bark and there germinate. Their action is slow but sure and no cure for it has yet been discovered; they eventually

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kill branch after branch of their host until the latter is starved by the death of its leaves and the abstraction of its sap. The blackwood possesses a very rough bark to which the seeds adhere easily; but the blue gum bark is not only smooth, but sheds itself periodically, and this tree thus escapes damage. A description of these serious pests, with numerous illustrations, will be found in Dr. Bidie's *Neilgherry Loranthaceous parasitical plants* (Madras Government Press, 1874).

DECIDUOUS FORESTS OF THE NORTHERN SLOPES.

The third group of the Nilgiri forests comprises the deciduous woods of the northern slopes between the crest of the plateau and the Moyár river.

Growth in the Moyár valley.

Just under the crest and in the Moyár valley are some sparsely distributed teak (mostly badly-shaped, small and damaged), some good vengai (*Pterocarpus Marsupium*) and blackwood (*Dalbergia latifolia*), and also *Lagerstrœmias* and *Terminalias*; while on the drier strip between these two areas is much *Anogeissus* and, as far west as Masinigudi, a good deal of sandalwood. Further west than this, where the rainfall is heavier, the sandal grows with but little heart and is thus of small commercial value.

The best patch of timber in this tract is that below the Paikára falls; but this has been very heavily worked in past years. Elsewhere timber trees grow but indifferently, as this country gets but little of the south-west monsoon; and the forest has chiefly been worked as a grazing-ground for the cattle of Mysore and the Nilgiris, for its minor produce (which is collected by the Kasubas) and for its sandalwood, which is of fair quality and has brought in a steady revenue for years past. The minor produce chiefly consists of honey, wax, shed deer-horns and myrabolams. The last, however, have become almost unsaleable since chrome tanning came into favour.

The sandal is marked and felled departmentally, cleaned of its sapwood, and taken to the Masinigudi dépôt for sale by tender. Present prices are about Rs. 5 per maund of heartwood.

Sandalwood plantation.

Near the Northern Hay estate, below the Paikára falls, a plantation of sandalwood 23 acres in extent was started in 1872–73 and for several years much money was expended upon it. Mr. Gamble calculated in 1885 that the outlay had by then amounted to Rs. 10,050, or Rs. 437 per acre. The site is unsuitable, being altogether beyond the western boundary of the range of natural sandal, and though the trees grow well enough they form but little heartwood owing to the dampness of the climate. The plantation has not been a success, therefore, and is not being extended.

DECIDUOUS FORESTS OF THE WYNAAD.

In the last class of the Nilgiri forests, the deciduous growth in the Wynaad, the only tracts of importance are the Benne and Mudumalai forests, the position of which is shown in the map in the pocket at the end of this volume. Though almost all the South-east Wynaad is covered with forest, much of the land is private janmam property in which the jungles are not at the disposal of Government. Some areas have been reserved round about Chérambádi, but they are far from any market and all that is done in them is to collect and sell the minor produce.

Benne forest.

The Benne forest consists of a block 11,000 acres in extent lying in the north-west corner of the Wynaad. It contains teak, vengai, ven-teak (*Lagerstrœmia lanceolata*), blackwood and *Terminalia tomentosa* (*karamatti*), and along the edges of the numerous streams which traverse it, and in its south-west corner, is much bamboo. Teak, vengai and ven-teak timber used to be extracted in large quantities, but the forest was grievously overworked and felling has now been stopped. A few years back a quantity of *T. tomentosa* was felled for sleepers on the extension of the Madras Railway up the west coast; but this wood, which is very common in the forest and is held in much esteem elsewhere, is for some reason almost unsaleable in Mysore. No timber at all is now being extracted from the Benne reserve and the only cattle which graze in it are those of the few Chettis who cultivate some of the paddy-flats within it. Minor produce is collected through the Kurumbas who live in the forest.

Teak plantation.

In 1871–72 a teak plantation was started in this forest; but though the expenditure on it has been heavy it does not give promise of much result since the trees, though healthy, grow with disappointing slowness. The soil is poor and moreover the rainfall is smaller, and the elevation greater, than teak cares for. Of late years endeavours have been made to induce the Kurumbas to help in raising teak seedlings. They have been given patches of bamboo jungle to cultivate on condition that in the second year they raised in pits, together with their crop, a certain number of teak seedlings supplied them from the Forest department's nurseries. Up to date two small areas have been treated in this way; but the Kurumbas do not take much interest in the matter and the teak is patchy and indifferent.

Mudumalai forest.

The Mudumalai forest (46,600 acres) is the janmam property of the Nilambúr Tirumalpád and was leased from him by Government for five years from 1857 and again for 99 years from October 1863 at a rental of Rs. 3,500 per annum. In 1891 the lease was revised to include a block of three square miles to the south-east; and

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at the same time some of the original conditions (which were unduly restrictive) were modified or cancelled, the rent was raised to Rs. 4,500, and it was stipulated that the lease should be renewable at this same figure for a further period of fifty years after the expiry of the original term.

The forest contains much teak, vengai, ven-teak and several of the *Terminalias*, particularly *T. tomentosa* and *T. Chebula*, while in the valleys are blackwood and the large thorny bamboo (*Bambusa arundinacea*) and on the drier uplands *Anogeissus latifolia* and the smaller or male kind of bamboo (*Dendrocalamus strictus*) in lesser quantities. On the northern border, next Mysore, large areas are covered only with coarse elephant grass through which fierce fires sweep annually, but in places the rather uncommon *Shorea Talura* grows gregariously and is useful for posts, smaller timber, and mine props. In the ravines the teak does splendidly, but the forest has suffered in the past from frequent fires and from indiscriminate felling. It was originally leased to a timber merchant who removed as far as possible all accessible timber that had any value. It was then worked by Government and with the Benne forest contributed the greater part of the timber for the Wellington barracks. When it was first leased in 1863 Kurumbas were employed to search out, fell and square any teak trees of sufficient size which they could find, and these were then dragged out by elephants and sent to Masinigudi and Ootacamund for sale. Even in 1863 it was reported that at the close of the year's operations 'little or no teak fit for extraction would be left;' but felling went on none the less. In 1878 Major Jago put some check on this recklessness, but between 1860 and 1882 the teak brought to the dépôts realized no less than 7½ lakhs.

In 1885, on Mr. Gamble's advice, a beginning of better conservation was made. Parts of the forest were divided off and trees were felled in them in a more systematic manner, all big timber and also all stunted and useless trees being removed to give the young teak as much light and air as possible and the compartment being then closed to cattle to allow of natural reproduction. Camping places were also fixed at definite spots in the hope of reducing the number of fires which occurred every dry season from people halting promiscuously in the forest.

The system then inaugurated has been more or less adhered to since, but, as a late Conservator put it, 'we cannot expect to make a large revenue from the improvement fellings; the plums have most effectually been picked out of the cake.' These fellings are at present being carried out on an extent of about 200 acres yearly;

and mature teak, vengai, ven-teak and blackwood are also being extracted to the extent of 10,000 or 12,000 cubic feet per annum. Except the blackwood, this timber is dragged by elephants to roadside dépôts in the forest and there sold. The blackwood is particularly fine and is taken to Nanjangód in Mysore, where it commands a ready sale at as much as Rs. 2 a cubic foot for the European market.

These operations, however, are being worked at a loss and it is under contemplation to extract some of the smaller timber as well. The forest is of little use for grazing as, the grass is long and rank. A few local cattle use it and the bullocks belonging to the numerous carts which ply from Mysore to the Wynaad and Ootacamund are grazed in it in considerable numbers on daily permits. The minor produce is of the ordinary kind.

Teak plantation there.

A small plantation of teak, 20 acres in extent, was formed in this forest in 1868–69; but, being outside the real influence of the south-west monsoon, it has not succeeded well, the growth being exceedingly slow. It has been thinned once or twice and is protected from fire; but it is not being extended.

CHAPTER VI.

OCCUPATIONS AND TRADE.

OCCUPATIONS—Arts and industries. TRADE. WEIGHTS AND MEASURES.—Land measure—Measures of capacity—Lineal measure—Table of weights—Monetary terms.

CHAP. VI. OCCUPATIONS.

THE peculiar circumstances of the Nilgiris make the statistics of the occupations by which its inhabitants subsist very different from those of the average district on the plains. In the low country as a whole, seven-tenths of the people live by agricultural and pastoral pursuits and in some areas the figure rises to as high as four-fifths; whereas in the Nilgiris the proportion of them which subsists in these ways is as low as three-fifths, or less than in any Madras district except the Presidency town itself. The number of those who earn a living by industrial pursuits is also proportionally lower than usual.

On the other hand the percentage of those who subsist by domestic service, building, commerce, the transport of merchandise, cooly labour and the learned and artistic professions is higher than usual, while the existence of the cantonment at Wellington brings up beyond the normal the proportion of those who belong to the army.

That these things should be so would be obvious, even without the aid of official statistics, to any one knowing the district. Nearly one-fourth of the people of the Nilgiris (a higher figure than in any other district in Madras) live in its towns, and thus the urban occupations bear a higher ratio to the rural callings than elsewhere; native industries are practically non-existent; European residents and their domestic servants are unusually numerous; and the district is not self-supporting and thus employs a large number of traders to organize its supply of necessaries and (in the absence of a railway further than Coonoor) a still larger number of cart-men to bring up and distribute these.

Arts and industries.

In no other Madras district are indigenous native industries so rare. The Kótas, who are but few in number, make a little rough pottery and leather, and some tools and implements for the tribes who are indigenous to the plateau; but otherwise almost every manufactured article on the hills is either brought up from

the plains or made by immigrant artisans in the two towns of Ootacamund and Coonoor. The weavers, dyers, cotton-cleaners, toddy-drawers, fishermen, oil-pressers, rice-pounders, lime-burners, bangle-makers, jewellers, rope-makers, metal-workers, basket-makers, leather-workers, potters and others who form so considerable a proportion of the population of the districts in the plains are extremely rare in the Nilgiris. There is, for example, perhaps not a single working weaver or dyer on the whole of the plateau.

Such industries as do exist and flourish are almost entirely those which are due to European enterprise and capital or are necessitated by the existence of Europeans in the district, and most of these have been referred to sufficiently elsewhere. They comprise the brewing at the Nilgiri and Rose and Crown breweries; the tea-factories at the Dévarshóla, Kódanád, Ouchterlony Valley, Liddellsdale and other estates; a few dairies, soda-water factories and printing-presses, the Cinchona Factory at Naduvattam and the Cordite Factory at Aravankád.

When the hills first became known to Europeans, enthusiasts believed that the inexhaustible supply of water-power afforded by the streams upon them would lead to the establishment there of mills and factories of every kind. But the absence (until comparatively recently) of any railway to them and the high rates of wages demanded by native labour on them were sufficient obstacles to the realization of any such dream. The ordinary native greatly dislikes life on the cold plateau away from his temples, bazaars and relations; the cost of living there, necessitating as it does warm clothing and a substantial house, is higher than on the plains; and consequently wages of all kinds rule very high. Those for unskilled labour are about double what they are in the low country.

TRADE.

The trade of the district is of no particular interest. The exports include the coffee, tea, cinchona, potatoes, cordite, beer and quinine which are grown or manufactured on it, and the imports comprise almost every necessary of life which is consumed within it, including (since, see p. 165, the country does not grow nearly enough food to support its population) large quantities of grain from Coimbatore and Mysore State.

Complete statistics are not available either for imports or exports. Those for rail-borne trade are collected, but not those for merchandise which travels by road; and the proportion of the trade which is carried by the railway is small. The outlet and inlet of the eastern part of the district, for example, is

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the Kótagiri ghát; the Coonoor ghát road carries an immense traffic notwithstanding the fact that the railway runs alongside it; a great many carts travel between Mysore and Ootacamund by the Gúdalúr and Sígúr gháts; and the whole of the exports and imports of the Wynaad and Ouchterlony Valley go and come by road.

The trade, wholesale and retail, on the plateau is largely in the hands of Musalmans, and these people are also the money-lenders. In the Wynaad the Máppillas do a great portion of the trade.

Well-attended markets are held once a week at Ootacamund, Coonoor, Kótagiri and Gúdalúr, the last of which supplies the Wynaad and the Ouchterlony Valley. Those at Ootacamund and Coonoor bring in the municipalities which manage them an annual revenue of over Rs. 20,000 each, a higher figure than is realized in any town in the Presidency except Trichinopoly.

WEIGHTS AND MEASURES.[1]

Land measure.

The table of land measures in use in the district is as under :—

28 adis, or country feet	=	1 kól	=	24 English feet.
1 square kól	=	1 gúli	=	576 sq. ft.
100 gúlis	=	1 cawnie	=	57,600 sq. ft. or 1·322 acres.
1 balla	=	3·82 acres	=	166,464 sq. ft.

The revenue accounts used to be kept in terms of cawnies, suSdivided into annas and pies :—

1 pie	=	300 square feet.
12 pies	=	1 anna or 3,600 square feet.
16 annas	=	1 cawnie or 57,600 square feet.

A cawnie is to the English acre as 160 is to 121, and to convert cawnies into acres, the usual course was to multiply the cawnie by 160 and divide by 121. Since the Revenue Survey was introduced, acres and cents have been used, as elsewhere, in all official measurements. For house sites, the measure known as a manai or ground (= 60 × 40 feet, or 2,400 square feet) is used.

Measures of capacity.

The measures of capacity are :—

2 alloks	=	1 ullok.
8 alloks	=	1 padi or measure.
8 measures	=	1 markál.
5 markáls	=	1 para.
400 markáls	=	1 garisa.
50 jodis (Mysore measures) or 100 Madras half-measures	=	1 palla.

[1] This section is taken from Mr. Grigg's *District Manual*.

Thus the Nilgiri measure is only half that of Madras. A Madras half-measure filled to overflowing is used in all transactions. Its cubic contents equal 50·17 inches. In the weekly markets held at the several stations and other parts of the district this measure is used in selling articles such as chillies, pepper, turmeric, and other condiments, which are generally purchased by weight in other places. Ghí is also sold by measure. Oil is sold by the Imperial quart bottle, of which 25 make one kodam or pot. The indigenous tribes of the district have a measure called kolagam, nearly equivalent in size and contents to the Madras half-measure.

Lineal measure.

The measures of length are :—

9 angulams or inches	=	1 ján or span.
12 do.	=	1 adi or foot.
18 do.	=	1 múra or cubit.
2 cubits or 3 English feet	=	1 gajam or yard.

Table of weights.

The ordinary table of weights is :—

1 palam	=	3 rupees' weight.
8 palams	=	1 seer.
5 seers or ($3\frac{1}{8}$ ráttal)	=	1 viss.
$1\frac{1}{4}$ viss or 50 palams	=	1 túk.
8 viss	=	1 maund.
20 maunds	=	1 báram or candy.

Jewellers use the following :—

32 kundumani (*Abrus precatorius*) seeds	=	1 star pagoda or varáha.
10 varáhas	=	1 palam ($1\frac{1}{4}$ oz. avoirdupois).
8 palams	=	1 seer.

Monetary terms.

The following variations of the ordinary monetary terms are in popular use :—

4 kás (pies)	=	1 dúddu.
3 dúddus	=	1 anna.
4 annas	=	1 belli.
4 bellis	=	1 rupee.
$3\frac{1}{2}$ rupees	=	1 varáha.

Four annas is known as dodda-hana and two annas as chikkahana.

CHAPTER VII.

MEANS OF COMMUNICATION.

ROADS—The Dannáyakankóttai-Dénád path—The Súndapatti pass—The first Kótagiri ghát—The present Kótagiri ghát—The first Coonoor ghát—The present Coonoor ghát—The Sígúr ghát—The Sispára ghát—The first Gúdalúr ghát—The present Gúdalúr ghát—Roads on the plateau—Wynaad roads—Management of the roads—Avenues—Travellers' bungalows and chattrams—Table of distances. RAILWAYS—The Nilgiri Railway—Sketch history of it—Extension to Ootacamund—Projected railways.

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IN the Nilgiris roads have always been a vital part of the district's existence. In the plains (as some one has said) 'all India's a road in the dry weather' and carts can generally get along after a fashion across country; but a steep-sided plateau with an undulating surface intersected in every direction by streams and bogs requires made roads and plenty of them if its existence is not to be crippled.

Something has already been seen in Chapter II of the manner in which the advance of the district followed directly on the construction of the first roads up to and across it, and the subject may now be considered in rather more detail.

The Dannáyakankóttai-Dénád path.

The earliest European visitors clambered up to Dimhatti and Kótagiri by the rough path which led from the now deserted village of Dannáyakankóttai (near the confluence of the Bhaváni and the Moyár) to Dénád. This was 20½ miles long and so steep that laden cattle could get up it only with difficulty.

The Súndapatti pass.

Some of the first visitors descended the plateau again by the almost equally unformed track (called in the old records 'the Kílúr pass' or 'the Súndapatti pass') which ran from Manjakambai (Kílúr), near the Kundah river ravine, down to Súndapatti in the Bhaváni valley, whence paths led east to Coimbatore and west to Manárghát in Malabar district through the dense jungle. This track along the Bhaváni valley from Coimbatore to Malabar was for many years a favourite route with the people who used to smuggle to the latter district the excellent tobacco grown in the former in the days when the sovereign herb was a Government monopoly in Malabar; and it is still used by hundreds of pack cattle to carry dry grain from the one to the other. As early as 1822 a travellers' bungalow had been built

near Manjakambai,[1] and Mr. Sullivan, then Collector, so improved the track about 1826[2] that it is still known sometimes as 'Sullivan's ghát.' In 1847 Major Ouchterlony said[3] 'the remains of a very good road still exist from the top of this ghát all the way to Ootacamund, but it has become impassable in many places owing to bogs having formed in the hollows and closed over it.' This road and the Súndapatti ghát are now no more than foot-paths.

The first Kótagiri ghát.

The first bridle-path to be made to the hills was that from Sirumugai (near Méttupálaiyam) to Dimhatti (where the first European residence on the plateau was built) and its neighbour Kótagiri. This path was due to the initiative of Mr. Sullivan, who suggested its construction in March 1819, within a few months after his first visit to the plateau. It was made by some Pioneers under the command of Lieutenant Evans Macpherson and was passable in 1821 and reported as completed in 1823. Travellers' bungalows were built at Sirumugai at the foot, in which 'servants are stationed, with every convenience for the reception of travellers, who are particularly recommended to refresh themselves there previous to ascending;' at Serulu, 'a delightful situation, amidst lofty wood, about 4,000 feet above the plain;' at Arivénu (sometimes called Jakkanéri), about 5,400 feet; and at Dimhatti at the top. That at Arivénu had originally been the quarters of Lieutenant Macpherson when he was making the path.[4] The path was 16½ miles in length and 'the whole way one continued ascent and descent, thus rendering the passage excessively tedious.'[5] The journey was performed on horseback or in a palanquin, the latter taking twelve hours. This continued to be the chief route to the hills from the Coimbatore side until the first Coonoor ghát was completed in 1832.

In 1830 Mr. James Thomas, then Collector, made another path from Kótagiri direct to Méttupálaiyam. This was only ten miles long, and thus was exceedingly steep; and it was never much used.

The present Kótagiri ghát.

The present Kótagiri ghát, which is a metalled cart-road 21 miles in length, generally seventeen feet wide, and with a

[1] Ward's report printed in the *District Manual*, Appendix, lxvii.

[2] Hough's *Letters on the Neilgherries*, 49.

[3] His survey report, M.J.L.S., xv, 75.

[4] Hough's *Letters on the Neilgherries*, 50-2, which partly follows Ward's report above cited.

[5] Jervis, 134.

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gradient of one in seventeen, was made from Kótagiri to Méttupálaiyam in 1872–75, and was traced and constructed by Major Morant, R.E., District Engineer. It was originally only eight or nine feet wide. In 1881 it was handed over to the District Board, and it was severely injured by the storm of November in that year. Between 1885 and 1888 it was widened to its present breadth and metalled, the improvements costing Rs. 32,000, and from 1889 it was maintained as a metalled road. It is little used except by the residents of Kótagiri and the planters thereabouts.

The present Coonoor ghát.

The first ghát from Méttupálaiyam to Coonoor (now known as 'the old Coonoor ghát') was begun in 1829. It was due to Mr. S. R. Lushington, then Governor, who in a minute of September 1829 condemned in strong terms the defects of Macpherson's bridle-path above mentioned. He directed Lieutenant C.F. LeHardy to trace a path up the Coonoor ravine, and this was done the next year. Construction was begun at once with a detachment of Pioneers under LeHardy and Captain Murray[1] whose head-quarters were at Coonoor, and on the 29th December 1832 the road was reported to have been completed.

The alignment is very faulty: the average gradient is about one in twelve, but near the top it is as steep as one in five, and in places is reversed. It took eight pairs of cattle to get a laden cart up it[2] and consequently almost all the traffic was carried by pack-bullocks, which ascended it 'by thousands on the Ootacamund market day, and indeed almost daily.' But the route had the great advantages over the old Kótagiri ghát that it ran more directly towards Ootacamund and that there was a travellers' bungalow at Coonoor, whereas Kótagiri boasted no such convenience; and it was more popular than the Sígúr and Gúdalúr gháts referred to below because the belt of malarial jungle at its foot was so narrow that travellers could pass through it without spending a night there.

It became almost at once the chief route from Madras to Ootacamund, and it led to the abandonment of the Súndapatti pass, the neglect of the old Kótagiri ghát, and the foundation of Coonoor as a sanitarium. All along the road between Madras and the Nilgiris Mr. Lushington posted two sets of palanquin bearers whose services were obtainable by application to the various Collectors, and the journals of that day[3] were jubilant at the fact that the journey could now be accomplished in as

[1] Jervis' book, 130 ff. Page 36 of this says Captains Murray and Eastment did the work.

[2] *Goa and the Blue Mountains*, 263.

[3] See, for example, *Asiatic Journal*, x, 103.

little as four days and for something less than Rs. 150. The Bhaváni used to be crossed at Méttupálaiyam in basket-boats, but in 1840 the first arched masonry bridge was erected at a cost of Rs. 12,500. It was washed away in 1847 but rebuilt. One of the arches was recently again washed away and has been replaced by a steel girder.

The present Coonoor ghát.

The existing Coonoor ghát is a splendid metalled cart-road, eighteen feet wide with a ruling gradient of 1 in 18½, and is 16 miles in length from Coonoor to Kallár at the foot of the hills, whence a nearly level stretch of five miles more leads to Méttupálaiyam. It crosses the old ghát at nine different points. Its chief defect is its zigzags, of which there are no less than twelve. It was completed in 1871 and was traced, and mainly constructed, by Lieutenant (afterwards Colonel) G.V. Law, who subsequently cut the 'Law's ghát' to Kodaikanal. His name is perpetuated by the cascade called 'Law's fall' on the lower part of the Coonoor river near the Wenlock bridge by which his road crosses that stream.

The completion of the road was hailed with delight by every one on the hills, for through carriage traffic was now possible between Ootacamund and the terminus of the Madras Railway at Coimbatore and 'the stoppage at Coonoor, hesitation whether to take palanquin, tonjon or munchiel down the ghát, disputes about coolies and several smaller inconveniences' were at length things of the past. This ghát remained the chief route to the hills until the railway to Coonoor was opened in 1899.

The handsome suspension bridge over the Kallár river was built in 1894 at a cost of Rs. 56,000 to replace a wooden bridge on masonry piers which had been washed away by floods in 1891.

The great beauty of the scenery along this road has frequently aroused enthusiasm. Sir Edwin Arnold[1] says—

'As you approach that gigantic wall through the belt of primeval forest which girdles its foot—a tangled wilderness of tropical growth, teeming with wild beasts and haunted by malaria—it seems impossible that any road can exist to lead to the summit. But the sturdy little ponies hitched to the pole of the *tonga* gallop off from Kullar, after a vicious kick or two; and you begin to ascend imperceptibly by cunning slopes and sudden advantages taken of cleft and ledge, until you look down through a vista of bamboos and palms upon the plain and the fever-belt. The way lies upward through a long forest-clad gorge, studded with rocks and waterfalls, and surmounted by peaks which catch and hold the clouds. From the thickets on either hand

[1] *India Revisited* (1886), 295.

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monkeys and jungle-fowl break; strange birds call and sing behind the veil of the thick creepers and rattans; the cry of wild animals is heard at intervals, with the noise of water and an occasional crashing tree. At every third mile the lean but plucky little ponies are changed, and the ascent continues uninterrupted, except by trains of native carts, drawn by those hardy milk-white bullocks of Mysore with the crooked, coloured horns, which enabled Tippoo Sultan to make such long marches against us. Here and there occurs a native village with its little bazaar perched upon some shoulder of the magnificent glen, and parties of naked coolies are everywhere seen metalling and repairing the blood-red road, that winds for thirty-one (*sic*) long and wonderful miles skywards to Coonoor. You pass in this way all the zones of Indian vegetation, from the almost fierce luxuriance of the dark jungle of the plain to the figs, bamboos and acacias of the lower spurs, then to the region of the coffee gardens, and, finally, to the tea plantations, and to a new floral world where Australian blue gums and wattles dominate.'

This constant change in the vegetation is, indeed, one of the chief charms of the journey and, as Sir Mountstuart Grant Duff said, 'the whole road is one long botanical debauch.'

The Sígúr ghát.

Before the present Coonoor ghát was made, the old Coonoor ghát had a formidable rival in the Sígúr ghát, which leads from the northern crest of the plateau down to Sígúr at the foot of the hills and is continued via Masinigudi and Tippakádu to Gundlupet, Mysore town and Bangalore. Though very steep, this is practicable for carts with two pairs of bullocks and in the fifties the authorities in Mysore made great efforts to facilitate journeys through that State and an enterprising transit company carried passengers from Madras via Bangalore through by this route in less time than it took them to get to Coimbatore and up by Coonoor. The fact that carts could use the Sígúr road also led to the greater part of the supplies for the district, and all commissariat stores, being taken up that way; and much teak was also carried up from the Benne and Mudumalai forests.[1]

From the earliest times a path had led from Sígúr up to Billikal, where a travellers' bungalow had been constructed. It was four miles in length and exceedingly steep; but being the nearest route to Bangalore had been dignified by the name of 'the Sígúr Pass.'[2] Another path ran from Kalhatti to Sembánattam, and thence to Mysore territory.[3]

[1] *Pharoah's Gazetteer* (1855), 474; Report on Important Public Works in 1854, 159; Baikie (2nd edn.), 19.

[2] Hough, 48; Baikie (1st edn.), 4; Jervis, 136; Report of 1844 on the Medical Topography of the hills, 5.

[3] Ward's report already cited.

The Billikal path was so bad (one report says that in wet weather it became so slippery that it was really dangerous even for foot-passengers to ascend) that in 1836 the existing ghát was begun. It was traced by Captain Underwood of the Madras Engineers, the officer who built St. Stephen's at Ootacamund, and was carried out by him and the Sappers and Miners under his command, their camp being at Kalhatti. It was finished in 1838. The road in continuation of it turns suddenly west a mile or two short of Sembánattam and makes a long détour to avoid crossing the 'Mysore Ditch' at the bottom of which the Moyár runs some 900 feet below the level of the surrounding country. At one time proposals were made to carry the road down into the Ditch and up the other side, which would have shortened the distance to Mysore by nine miles and avoided much elephant-infested jungle;[1] but they were never carried out. The existing bridge over the Moyár at Tippakádu was built in 1897 at a cost of Rs. 7,000. The original bridge there was erected in 1841 and washed away in 1847; after which Major Cotton put up a new one which apparently lasted till 1877, when the woodwork had to be renewed. The bridge over the Sígúr river was constructed in 1889 at an outlay of Rs. 10,000 in place of an earlier lattice bridge made in 1854.

The gradient of the Sígúr ghát is usually 1 in 12, but in parts it is as steep as 1 in 10 and laden carts travelling from Mysore to Ootacamund usually prefer to go all the way round by the Gúdalúr ghát. In 1840, however, Lady Gough and family drove up it 'in their carriage and four horses, and throughout the heavy carriage got on with great ease.'[2]

The head of the ghát is about four miles from Ootacamund; at Kalhatti (six miles) is a travellers' bungalow; Sígúr, at the foot of the descent, where there used to be another bungalow, is thirteen miles; at Masinigudi (sixteenth mile) is a second bungalow; and at Tippakádu, which is 24 miles from Ootacamund, is a third.

The country at the foot of the ghát is a malarious jungle which has always been infested with elephants. In former times they sometimes—

'Played sad pranks at the expense of invalids seeking the hills. The great bucks are met singly on the roads whisking the flies with half a tree for a fan, and a poor lady, having thus encountered one the

[1] Report on Med. Topog. above quoted, 7.

[2] *Asiatic Journal*, xxxi, 129. Major-General Sir Hugh Gough, K.C.B., (afterwards Lord Gough), was then in command of the Mysore Division, the head-quarters of which were at Bangalore.

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other day, took refuge with all her attendants in the thickets. The beast went up to her palanquin and twirled it by one pole over his head with much glee, then by the other pole till it gave way, and then danced upon it with much delight, and capered into the jungle, as she said, with a horse laugh.' [1]

The Sispára ghát.

About the same time that the Sígúr ghát was made the Sispára ghát was completed.

This ran west-south-west from Ootacamund to Avalanche ($13\frac{1}{4}$ miles); thence up the Kundahs to the spot now called Banghi Tappál (nine miles more); to Sispára in the extreme south-western corner of the plateau (another nine miles); and thence down a steep descent to Walaghát (half way down the slopes) and Shólakal at the bottom of them, $10\frac{1}{4}$ miles more. It is now practicable for lightly-laden carts as far as Avalanche (16 miles by the improved trace) and is a maintained bridle-path as far as Sispára; but the ghát portion is absolutely impassable, except on foot, being overgrown with dense jungle. Up to Sispára it is much used by shooting-parties; and two private shooting huts stand not far south of it at Pírmand and Bison Swamp.

This Sispára ghát, originally known as the Kundah ghát, was suggested in November 1831 by Mr. S. R. Lushington, then Governor of Madras, with the idea of providing a speedy route from Calicut (whither invalids from Bombay could easily travel by steamer) to Ootacamund. Major Crewe, Commandant of the Nilgiris, Lieutenant LeHardy, the tracer of the old Coonoor ghát then in progress, and Captain Murray of the Pioneers already mentioned searched the western side of the plateau for a practicable ghát and at length heard of the Sispára path, which, though greatly overgrown, was then used by tobacco-smugglers.

Lieutenant LeHardy traced a line down this and Captain Murray and his Pioneers were entrusted with the construction of the road. They established camps at Avalanche and Sispára (which latter became known as Murraypet) and between the 10th of January and the 31st of May 1832, with the aid of coolies and 'tank-diggers,' they succeeded in opening up a path of a kind down the slopes and connecting it with the roads in the plains.[2] The line of this was so infested with elephants and tigers that the Collector of Malabar obtained sanction to the purchase of five jingalls and the employment of ten peons to shoot these beasts and protect the coolies.

[1] Macpherson's *Memorials of Service in India* (Murray, 1865), 13.
[2] Jervis, 125-7, 141-2.

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The rains then set in and stopped work, and later on the Pioneers were diverted to the widening of the Coonoor ghát. No more was done to the Sispára ghát until 1836, when, in consequence of a minute of Sir Frederick Adam's, work was begun again. One of the arguments in favour of this line was that it led, at a distance of fifteen miles from the base of the hills, to the Beypore river, which was navigable thence to the sea and by the help of which it was believed that it would be possible to travel from Sispára to Calicut in one day.

Dr. Benza, surgeon to Sir Frederick Adam, passed along the road in 1836 on a geologizing tour, and his account[1] shows what had then been done. The track was so narrow that two people could not ride abreast along it. The principal obstacle was the 'ladder hill' near the middle of the descent, which was surmounted by steep zigzags at very acute angles. The Pioneers were camped at Walaghát, half way down, in huts scattered through the jungle, the site being too steep and confined for any regular lines.

The road was finished in 1838, the gradient being one in nine, and bungalows for travellers were built at Shólakal, Walaghát, Sispára and Avalanche. But the extraordinarily heavy rainfall at that end of the Kundahs necessitated large annual repairs in subsequent years; the trace was so steep that it was seldom used for laden cattle; and the climate was so severe and the shelter *en route* so insufficient that Europeans often could not get coolies to come with them to carry their baggage. The ghát thus failed to fulfil the high hopes which had been formed of it. As early as 1844 it was declared[2] to be 'rarely traversed except at the height of the dry season,' and it was eventually abandoned. The bungalow at Sispára was accidentally burnt down and was never rebuilt.

The first Gúdalúr ghát.

The Gúdalúr ghát runs down the western side of the plateau from Naduvattam to Gúdalúr, where it connects with the roads leading to Mysore via Tippakádu, to Sultan's Battery, to Vayitri and the Támrasséri (Tambracherry) pass, and to Calicut via the Karkúr ghát. The first track at this point was made from a grant of Rs. 5,000 obtained by Mr. Sullivan in 1823. Hough's *Letters*, written in 1826, make no mention of it, so that if finished by then it cannot have been much used; but Mr. S. R. Lushington, the Governor, ascended and descended by it in 1829, when it was almost completed. It was made by the Pioneers. Writing

[1] M.J.L.S., iv, 276 ff.

[2] Report on Med. Topog. already cited, 5.

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in 1833, Baikie calls it and the old Coonoor ghát the two chief routes to the hills, but says it was exceedingly steep, being only 4¾ (later accounts say 5½) miles long with a gradient of about one in four, and in wet weather very slippery.

Bungalows had been built by then at Gúdalúr and Naduvattam, but the great objection to the route to travellers from Mysore was the fact that the road at the foot of the hills led through the extremely malarious Wynaad jungle. Baikie's book contains elaborate instructions to the wayfarer who might unluckily be compelled to spend a night in these pestiferous forests, warning him to keep awake and moving about all the time, have a large fire lighted, avoid all stimulants, but 'if accustomed to the use of tobacco, light his segar,' and consult a doctor the moment he reached Ootacamund. The emphasis he laid on the need for every precaution was probably largely due to the fact that his friend Dr. A. T. Christie (mentioned on p. 178 as the man who sent for the first tea-plants brought to the plateau, and clearly an officer of much promise) had died of malaria contracted when passing through these jungles; but the danger of the journey was so well understood that the palanquin-bearers were posted in such a way that no one need spend a night in the forests, and travellers were strictly enjoined so to arrange matters that these men might be able to get out of the jungle before dusk. People from the west coast were obliged to use this route; but European troops marching from Bangalore to Ootacamund were sent all the way round by Méttupálaiyam and the old Coonoor ghát. When the Kundah ghát was first opened, traffic from the west coast for some time followed it in preference to the Gúdalúr route and about 1846 the tappál runners were transferred to it from the latter.[1] This latter then became neglected, the ferries along the roads connecting with it being irregularly worked and the jungle encroaching seriously upon it. This was the more deplorable in that the continuation from Naduvattam to Ootacamund had about this time been repaired and made practicable for carts.[2]

The present Gúdalúr ghát.

In the sixties the opening up of the district was actively pushed on, and among other works the present Gúdalúr ghát was made. It was started in 1865, the trace being made by Colonel Farewell, M.S.C., and was opened to cart traffic in 1870; but later reports showed that it was not really completed then, portions of it being only eight feet wide and much rock being left

[1] Ouchterlony's survey report, M.J.L.S., xv. 73.
[2] *Ibid.*

unremoved. The continuation from Naduvattam to Ootacamund was also widened and improved in 1870; but it was not metalled, and in 1882 was declared to be only a fair-weather route, 'though carts have struggled along it even in wet weather.' Proposals to improve it from the revenue of the Government Cinchona Plantations to which it led were negatived.

When the Wynaad gold-boom of 1879–82 began, complaints of the state of the road from Ootacamund to Gúdalúr were loud and long and Government sanctioned large sums for its improvement. By 1885 Rs. 1,83,250 had been spent upon it. The ghát portion is now nine miles long with a maximum gradient of 1 in 19, and the whole section from Gúdalúr to Ootacamund is admirably metalled and maintained throughout. A bridle-path on steeper gradients provides a shorter route for foot-passengers and horses. This is greatly used by coolies passing from the Wynaad to Ootacamund, and in the monsoon the whole country is so swept by bitter winds and rain that, though shelters exist at intervals, numbers of natives have died along the path from cold and exposure. The number of the shelters is now being increased.

The bridge over the Paikára river, twelve miles from Ootacamund, was made in 1857. Up to at least as late as 1830[1] the only means of crossing the Paikára in flood time was a basket-boat. This was replaced, some time before 1834, by a Government ferry consisting of a platform laid upon two boats which was worked by hauling on a cable of twisted rattan fixed from bank to bank. The platform of the 1857 bridge was partly washed away in June 1896 and the height of the piers was then raised by three feet.

Roads on the plateau.

The lie of the various main roads on the plateau is sufficiently indicated in the map at the end of this volume and need not be described in detail. Nor are their histories of individual interest, practically all of them having grown by gradual expenditure from footpaths to bridle-paths and from bridle-paths to roads. Exceptions to this slow process of evolution are the driving roads which have been initiated in or round about Ootacamund itself by the Governors of Madras from Sir M. E. Grant Duff onwards, and have been named after them the Grant Duff, Connemara, Wenlock, Havelock and Ampthill Roads.

Wynaad roads.

The road from Gúdalúr to Nádgáni and thence three miles down the Karkúr ghát as far as the Malabar frontier was made in 1865, and the wooden girder bridge at Sípatti was completed by Captain Coningham, R.E., in 1866. The original

[1] *Asiatic Journal*, iii, 312 ff.

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road onwards from Nádgáni to the Malabar frontier near Chérambádi was made by the planters in that part of the Wynaad, and the Planters' Association received a grant for its upkeep until 1879–80, when the road was transferred to the District Board.

When the gold-boom drew attention to the indifferent state of the communications with the Wynaad, Government resolved to put the whole line from Ootacamund to Calicut, via Gúdalúr and Vayitri, into good order. On the Ootacamund-Gúdalúr section of this Rs. 1,83,250 had (as above mentioned) been spent by 1885 and on the Vayitri-Calicut section Rs. 3,19,788. The Gúdalúr-Vayitri section was then taken up and estimates for Rs. 4,10,000 for an eighteen feet road on a partly new trace were sanctioned. These were subsequently revised on more than one occasion and eventually the work, which was completed in November 1892, cost Rs. 6,60,700. The Chóládi bridge at the Malabar frontier was included in this, and cost Rs. 32,750 Owing to the present desolate state of the country through which the road runs in this district, it is now but little used, and one hardly meets a cart a mile along it.

The Gúdalúr-Tippakádu road was formed, bridged and partly metalled between 1865 and 1867.

Management of the roads.

All the roads in the district are now under the care of the District Board except that from Ootacamund to Kallár at the bottom of the Coonoor ghát, which is maintained by the Public Works department. That department receives one-third of the tolls collected along it. Besides the main and second-class cart-roads, many miles of bridle-paths are maintained by the District Board in every direction about the hills.

Avenues.

Avenues exist along only eighteen miles of the roads, it being held that they are not required in this temperate climate and that the constant drip from them is very injurious to the road-surface.

Travellers' bungalows and chattrams.

Particulars of the travellers' bungalows in the district, with the accommodation available in each, will be found in the separate Appendix.

Seventeen chattrams, as shown in the margin, are maintained by the District Board. Except those at Tippakádu and Masinigudi, these receive an annual contribution of Rs. 30 each (Nádgáni, Rs. 70) from Government towards the cost of their establishment. The Gúdalúr and Dévála chattrams were

Ootacamund taluk.	*Coonoor taluk.*
Hamilton's.	Aravankád.
Masinigudi.	Barliyár.
Naduvattam.	Craigmore.
Nanjanád.	Kótagiri.
Ouchterlony's.	Yellanhalli.
Paikára.	*Gúdalúr taluk.*
Tippakádu.	Dévála.
Sandy Nullah.	Gúdalúr.
Sígúr.	Nádgáni.

constructed from local funds in 1879; that at Nádgáni was transferred from Malabar district in 1873; and the rest were taken over from Government in 1871. None of the chattrams provide food; they are merely intended as shelters.

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Table of distances.

The following table of distances along the chief routes[1] may be of use:—

From	To	Miles	Furlongs.
Ootacamund	Coonoor	11	0
Coonoor	Kallár	15	0
Kallár	Méttupálaiyam	6	0
Ootacamund	Kalhatti	6	1
Kalhatti	Masinigudi	10	2
Masinigudi	Tippakádu	7	4
Tippakádu	Mysore City	45	4
Ootacamund	Paikára	12	0
Paikára	Naduvattam	8	4
Naduvattam	Gúdalúr	9	4
Gúdalúr	Nádgáni	9	6
Nádgáni	Dévála	2	4
Dévála	Chérambádi	11	3
Chérambádi	Chóládi bridge	2	6
Gúdalúr	Nellakóttai	12	0
Nellakóttai	District frontier	5	0
Gúdalúr	Tippakádu	11	0
"	Calicut (by Karkúr ghát)	69	0
Ootacamund	Paikára falls	17	3
"	Avalanche	16	0
"	Kótagiri	18	0
"	Dévashóla	10	3
Dévashóla	Mélúr	2	4
Mélúr	Kulakambai	8	0
Ootacamund	Yellanhalli	6	0
Yellanhalli	Kátéri	5	6
Kátéri	Kulakambai	5	4
Coonoor	Kátéri toll-bar	6	0
"	Dolphin's Nose	6	0
"	Kótagiri	12	0
Kótagiri	Kódanád	10	0
"	Méttupálaiyam	20	7

RAILWAYS. The Nilgiri Railway.

The only railway in the district is that which runs from the terminus of the Madras Railway at Méttupálaiyam up the ghát to Coonoor. It is 16·90 miles in length between these points and is on the metre gauge; and the ghát portion, which begins at Kallár, five miles from Méttupálaiyam, is on a ruling gradient of 1 in 12½ and worked on the Abt system, an improved modification of the Rigi rack-rail principle. It is now being extended to Ootacamund, and the question is under consideration whether the

[1] Kindly furnished by the District Board Engineer.

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whole line might not be worked by electric power generated by the Coonoor or Kátéri rivers.

Sketch history o it.

Schemes for a railway up the Coonoor ghát date from 1854, before the present ghát road was built, when it was proposed to lay out a series of double-railed inclined planes up the spurs and pull loaded wagons up them by the weight of tank-wagons filled with water and connected with the loads by a rope running round a wheel at the top of the incline.

The matter was first seriously considered in 1874, when statistics of traffic were collected and preliminary discussions on the various possible systems were initiated. Even as early as this it was proposed to lessen the working expenses by using electric power.

In 1876 the Swiss Engineer M. Riggenbach, the inventor of the Rigi system of mountain railways, offered to construct the railway on the Rigi method and on the standard gauge, on the conditions (among others) that Government gave the land free, promised a guarantee of 4 per cent. for ten years on the estimated cost of £400,000 and granted exemption from taxes for the same period. Government, however, declined to agree to these terms and the offer fell through.

In 1877 the Duke of Buckingham had estimates prepared for an alternative scheme providing for a railway from Méttupálaiyam to a point two miles north of Kallár, and an inclined ropeway thence to Lady Canning's Seat. This latter was to be two miles long and in places as steep as 1½ to 1; and the head of it was to be connected by rail with Coonoor, about six miles away. This scheme was found to cost almost as much as M. Riggenbach's, and moreover none of the Government's advisers cared to recommend such a hazardous undertaking as the hauling of passengers up an incline of 1½ to 1. So this project likewise fell through.

In 1879 a memorial from landowners and residents on the hills suggested that money for the guarantee for M. Riggenbach's scheme should be raised by doubling the tolls, increasing the land assessment on the hills by 25 per cent., granting a block of 20,000 acres on the Kundahs to be exploited to the best advantage, and in certain other similar ways; but none of these proposals found favour in the eyes of Government.

In 1880 M. Riggenbach came out to the Nilgiris and with the assistance of Major Morant, R.E., District Engineer (who took an enthusiastic interest in the scheme) worked out detailed estimates

for a rack railway which came to only £132,000. A local company (the Nilgiri Rigi Railway Co., Ltd.) was formed to construct the line and Government gave it encouragement and certain concessions, agreeing to allow it to acquire the necessary land under the Land Acquisition Act and to lay rails along the road from Méttupálaiyam to Kallár. The company, however, presently came forward with a request for a Government guarantee of 4 per cent. on £150,000 for 15 or 20 years; and Government were naturally not prepared to grant this without demanding reciprocal conditions. What with the necessity of obtaining the consent of the Government of India, fresh demands by the company, and the need of safeguarding State interests, it was late in 1882 before the terms were finally settled and a limited guarantee promised.

The English public, however, was not satisfied with the nature of the guarantee or the sufficiency of the estimates, and capital for the proposed company was not forthcoming. The local company found it necessary to ask Government to modify its terms, and to import an English engineer to scrutinize the estimates; and as they could not find the money necessary for this latter need Mr. Richard Woolley of Coonoor agreed to advance it on condition that he was given the contract for the construction of the line. His offer was accepted and thence began his connection with the railway, of which he was eventually Agent and Manager.

A new company, called the Nilgiri Railway Co., was formed in 1885 with a capital of 25 lakhs and the proposal for a rack line was dropped for a time in favour of an adhesion line, similar to the Darjeeling Railway, on a gradient of one in thirty. Eventually the rack principle came again into favour; in 1886 a contract was entered into between the Secretary of State and the new company; in 1889 the necessary capital was raised in London; and in August 1891 the first sod of the line was at last cut by Lord Wenlock, then Governor of Madras.

The company, however, was not able to complete the line and went into liquidation in April 1894.

A new company was formed in February 1896 to purchase and finish the line; and between this and the Secretary of State an agreement was concluded by which all Government land required for the line was granted free and a guarantee of 3 per cent. on the capital during construction was accorded. The line was opened in June 1899 and was worked at first by the Madras Railway under an agreement.

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The line was subsequently offered by the company to Government; and it was purchased by the latter for 35 lakhs in January 1903, up to which time the capital outlay had been 49 lakhs. It is still worked by the Madras Railway on certain terms, but the net earnings have never been enough to pay an interest of more than two and a fraction per cent. on the purchase money. The line has not succeeded in capturing by any means the whole of the heavy traffic up the ghát, which is still thronged daily with bullock-carts. Slips still continue at certain points along the route and the cost of maintenance and repairs is thus heavy.

Extension to Ootacamund.

The extension of the line to Ootacamund is now in progress. It will be on the same (metre) gauge, and $11\frac{3}{4}$ miles in length; and the estimate is Rs. 24,40,000. The steepest gradient will be 1 in 25 and there will be no rack. It was at one time proposed that the Ootacamund terminus should be at Charing Cross; but in 1904 it was decided to place it at Méttuchéri. This involved the realignment of the latter part of the route and an ugly embankment across the Lake near the Willow Bund. Besides Coonoor and Ootacamund, there will be stations at Wellington, the Cordite Factory, Kéti and Lovedale. The greater part of the earthwork has been carried out on contract by the 61st and 64th Pioneers, who established camps near the Half Way House, at Lovedale and in Méttuchéri itself. The regiments receive payment for work done at the contract rates and from this are required to meet all extra expenditure incurred in connection with their employment, including the cost of transport, extra clothing, repair and maintenance of tools and wear and tear of tents.

An estimate for Rs. 31,29,000 for the electrification of the whole line from Méttupálaiyam to Ootacamund is before the Railway Board; but as this, if sanctioned, will take some time to carry into effect, steam working will be adopted on the extension to begin with.

Projected railways.

Several other railways in and about the district have been projected at different times. In 1880, when the gold-boom had drawn such attention to the defective communications with the Wynaad, it was proposed by the planters and gold companies that a line should be run from Beypore, which it was hoped to turn into a good harbour, to Gúdalúr and on to Mysore. A company for the purpose was initiated, but as Government declined to promise any guarantee it was never really formed. An alternative proposal to continue the Mysore Railway from Mysore was similarly suggested and eventually dropped.

Schemes which will render the hills more accessible from other parts of South India are those to continue the Southern Mahratta Railway from Nanjangód to Méttupálaiyam via the Gazalhatti pass and Satyamangalam, which would shorten the distance from Bangalore and Mysore; and to link Dindigul with Pódanúr via Pollachi, which would save travellers from Madura, Tinnevelly and Travancore the present long détour through Trichinopoly and Erode. The former line has been surveyed but deferred in favour of others with more pressing claims; while the latter has been included in the three years' programme of construction which begins in 1906-1907.

CHAPTER VIII.

RAINFALL AND SEASONS.

RAINFALL—Influence of the south-west monsoon—And of the north-east monsoon—The highest and lowest falls—The figures for Ootacamund—Hail-storms. BAD SEASONS. FLOODS AND STORMS—In 1865—In 1881—In 1891—In 1902—In 1905.

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THE official statistics of the rainfall at the various recording stations in the district are as under:—

—	Dévála, 1884–1904.	Gúdalúr, 1877–1904.	Naduvattam, 1882–1904.	Paikára, 1882–1904 *.	Ootacamund, 1870–1904.	Kilkundah, 1872–1904.	Kéti, 1872–1904.	Wellington, 1871–1904.	Coonoor, 1872–1904.	Kótagiri, 1880–1904.	Kódanád, 1872–1904 †.	District Average, 1870–1904.
January ...	0·12	0·09	0·19	0·19	0·38	0·90	0·53	1·06	1·78	1·36	0·94	0·70
February ...	0·18	0·29	0·30	0·25	0·43	1·64	0·89	1·39	2·52	2·08	1·46	1·14
March... ...	0·88	0·86	0·77	0·79	1·00	1·74	1·66	2·23	2·62	1·86	1·14	1·55
Total ...	**1·18**	**1·24**	**1·26**	**1·23**	**1·81**	**4·28**	**3·08**	**4·68**	**6·92**	**5·30**	**3·54**	**3·39**
April ...	3·87	3·31	3·27	3·54	3·24	3·19	3·20	3·93	4·31	4·40	3·40	3·59
May	5·80	5·33	5·20	6·61	6·22	4·48	5·32	3·98	4·46	5·40	6·87	5·37
Total ...	**9·67**	**8·64**	**8·47**	**10·15**	**9·46**	**7·67**	**8·52**	**7·91**	**8·77**	**9·80**	**10·27**	**8·96**
June	33·02	16·75	18·92	12·40	6·17	5·29	4·42	3·31	2·88	3·86	3·70	8·29
July	45·83	28·30	32·60	20·29	6·67	7·02	4·78	3·53	3·12	4·47	4·20	11·36
August ...	32·98	16·39	18·62	11·33	4·71	4·07	4·65	3·89	3·53	4·15	3·87	8·03
September ...	20·43	8·37	9·04	7·68	4·90	4·81	6·35	5·99	6·08	6·11	7·34	7·07
Total ...	**132·26**	**69·81**	**79·18**	**51·70**	**22·45**	**21·19**	**20·20**	**16·72**	**15·61**	**18·59**	**19·11**	**34·75**
October ...	13·14	7·05	8·26	8·93	8·17	10·70	8·99	10·39	12·62	13·83	11·71	10·25
November ...	3·81	2·54	3·20	4·33	4·49	7·66	4·94	7·04	10·77	9·46	8·07	6·36
December ...	1·64	0·93	1·23	1·89	1·97	3·99	2·71	3·95	7·17	4·57	4·49	3·21
Total ...	**18·59**	**10·52**	**12·69**	**15·15**	**14·63**	**22·35**	**16·64**	**21·38**	**30·56**	**27·86**	**24·27**	**19·82**
Total for year.	**161·70**	**90·21**	**101·60**	**78·23**	**48·35**	**55·49**	**48·44**	**50·69**	**61·86**	**61·55**	**57·19**	**66·92**

* Omitting 1897. † Omitting 1883.

Influence of the south-west monsoon.

From these a number of facts are obvious at a glance : The greater part of the total annual rainfall (34·75 inches out of 66·92 inches) is brought by the south-west monsoon, which blows from June to September, and the heaviest falls occur in the stations which are furthest west and thus are the first to receive this monsoon. As it travels eastwards, the current rapidly deposits the moisture with which it is laden, and every succeeding station to the east gets less and less rain from it. Thus at Déväla, which is just at the top of the Western Gháts and receives the full force of the monsoon straight from the sea, the total annual fall is nearly 162 inches against the district average of 67 inches and the fall during the south-west monsoon is 132¼ inches against the district average for that period of 34¾ inches. Gúdalúr is much sheltered from the south-west by the spurs on the northern boundary of the Ouchterlony Valley, and there the annual fall drops to 90 inches of which nearly 70 are received during the south-west monsoon. But at Naduvattam, which is above these spurs and on the very crest of the plateau and so just at the spot where the monsoon receives a sudden check in its progress, the total rainfall rises again to nearly 102 inches of which 79 come with the south-west current. As the monsoon travels eastwards across the plateau it gives less and less rain. The fall during its course at Paikára (only four miles east of Naduvattam as the crow flies) drops to 51·70 inches; at Ootacamund (eight miles again east) to 22·45 inches ; and at Coonoor, which is sheltered by the big spurs of the Dodabetta range, to only 15·61 inches.

And of the north-east monsoon.

This Dodabetta range checks the current and causes it to deposit the greater part of the moisture which it has left; and all the recording stations to the east of it (Coonoor, Wellington, Kótagiri and Kódanád) receive less rain from it than they do from the north-east monsoon which blows in the directly opposite direction from October to December. During this latter current, indeed, the above conditions are all reversed and the stations on the east of the district fare better than those on the west for the same reason as before, namely that this monsoon reaches them first, before it has deposited much of its moisture. At Coonoor, which stands at the head of a ravine the mouth of which faces east and so collects the damp winds like a funnel, the fall between October and December is as high as 30·56 inches; Wellington, which lies further within the plateau and is somewhat sheltered by the hills to the east of it, receives only 21·38 inches; Kótagiri and Kódanád, which are on the eastern crest of the plateau, get 27·86 and 24·27 respectively ; and Kílkundah,

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where the rain driving up the Bhaváni valley is checked, receives 22·35 inches. But at Ootacamund, which lies right under the protecting mass of Dodabetta, the fall during this monsoon is only 14·63 inches; at Naduvattam, further west, only 12·69; and at Gúdalúr, down under the lee of the plateau, only 10·52 inches.

Between January and March, the driest season of the year, Coonoor, the other stations on the east of the district, and Kílkundah all receive some benefit from the last showers of this north-east monsoon; but nowhere else is the fall in these three months as much as two inches. In April and May showers appear impartially all over the country and every station gets from 7½ to 10¼ inches.

This unequal distribution of the rainfall, as is pointed out elsewhere in this book, is of the greatest importance from an agricultural point of view—plants and trees which will do well on the moister west side refusing to flourish on the drier eastern slopes—and also provides the resident in the district with a wide choice of climates. Its greatest extremes do not appear in the official statistics, for there are no recording-stations in either the wettest or the driest parts of the district. Probably the annual rainfall on parts of the Kundahs is as much as 200 inches, and that on the south-eastern slopes above the Coimbatore district as little as 40 inches.

The highest and lowest falls.

The average annual fall in the district as a whole is raised by the heavy rain in its western stations and is thus larger than in any other Collectorate except the two on the West Coast proper —Malabar and South Canara.

The highest recorded average for the whole district was the 94 inches of 1902 and the lowest the 38 inches of 1876, the year of the Great Famine; but the total supply was over 80 inches in 1882, 1893, 1896 and the four years 1900—1903, and was under 55 inches in 1870, 1874–76, 1878–79, 1881 and 1899.

The figures for Ootacamund.

In Ootacamund itself the total fall is only 48·35 inches, which is less than that of Madras (49·02) and very little more than the figures for the littoral districts (Chingleput, 45·33; South Arcot, 43·57; and Tanjore 44·75) which lie next south of the Presidency town. Yet Ootacamund is popularly classed as a rainy spot. The chief reason for this is the fact that nearly two-fifths of its total fall is received during the three months (May—July) during which it is full of visitors and that this arrives in lighter showers than anywhere else in the district and is spread, on an average, over 38 of the 92 days in those three months. A visitor who finds that more or less rain has fallen on 40 per cent. of the

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days he spent in the station not unnaturally classes the place as a damp locality. The highest recorded fall in the town was the 75·85 inches of 1903, when 25 inches fell in July alone; and the lowest the 25·16 inches of 1876. Other years of heavy falls were 1882 (74·37 inches), 1902 (66·05) and 1901 (60·18); and of droughts, 1888 (38·70), 1878 (39·01) and 1879 (39·47).

Hail-storms.

No snow ever falls on the Nilgiris (there is a vague unverified tradition that some fell on the Kundahs on one occasion) but fierce hail-storms are by no means uncommon The hail-stones are generally much flattened and are often as large as a rupee. Old residents have known them drift into hollows to the depth of a foot and remain on the ground, in shady spots, for two whole days. They have sometimes (as in April 1891) done immense damage to the coffee blossom. One of the worst hail-storms on record was that which devastated the Government Cinchona plantation called Hooker in 1879. A report of the time said that much of it had been 'practically destroyed. A few scattered trees survive, which serve to show, by the injury to their bark and the broken branches, the severity of the blows they received.'

BAD SEASONS.

Actual famine has never been known on the Nilgiris proper or in the Wynaad; but the tract round Masinigudi appears to have suffered somewhat severely in the Great Famine of 1876—78. Elsewhere in the district high prices caused by scarcity in other parts of the Presidency have several times pressed hardly upon the poorer classes, especially since so much of the food-supply of the district is imported; but regular relief-works have never been necessary. In 1885 the collection of half the land revenue was postponed owing to adverse season; in 1899–1900 payment of one-third of the kists was similarly allowed to be deferred, while to provide employment for the very poor the District Board started special work on some of the roads near the villages worst affected; and in 1906 the realization of certain outstanding arrears in a few villages on the northern slopes was postponed and the Board again gave assistance by opening local fund works near the villages which were most distressed.

FLOODS AND STORMS.

The rivers of the plateau all flow in deep channels cut by themselves in past ages, and floods on the great scale so common in the low country, accompanied by widespread loss of life and property, are altogether unknown. The chief damage occasioned by unusual rain is to bridges over the streams and to the roads.

In 1865.

One of the worst storms on record occurred round Ootacamund and Coonoor on 23rd October 1865. The right approach of the masonry bridge which crosses the Coonoor stream at the

CHAP. VIII. FLOODS AND STORMS.

edge of the ghát near the present Coonoor railway-station was covered with a torrent four or five feet deep and at Ootacamund the Lake rose to the top of the Willow Bund and threatened at one time to breach it.

In 1881.

A storm in November 1881 did great damage to the new Kótagiri-Méttupálaiyam ghát road and occasioned many land-slips on the Coonoor ghát.

In 1891.

Between the 11th and 14th October 1891, 29 inches of rain fell in Kótagiri and did such damage to the Kótagiri ghát road that it was blocked to all traffic for some days and to wheeled traffic for nearly three weeks. The same storm also swept away the Barliyár and Kallár bridges on the Coonoor ghát and consequently the plateau was cut off for days from all communication with the plains, to the grievous inconvenience of its inhabitants. Wheeled traffic was not restored on the Coonoor ghát until December. The rainfall at Coonoor in October that year was no less than 51 inches, or five-sixths of the whole supply received in an average year.

In 1902.

In December 1902 much the same combination of misfortunes occurred again. Twenty-one inches of rain (three times the average amount) fell in that month in Coonoor, and at Kótagiri 24 inches (six times the average amount) was received, of which 8·45 inches fell in a single night. The Coonoor railway was blocked for a month; the old and new Coonoor ghát roads for nearly as long; and all the traffic of the eastern side of the plateau was thrown upon the Kótagiri ghát, which was itself in a parlous condition—slips having occurred throughout it and being serious in six of its twenty-one miles.

In 1905.

On the night of the 4th October 1905, 6·8 inches of rain fell at Coonoor in three hours and the Coonoor river and its affluents came down in heavy and sudden flood, the former sweeping right over the parapet of the bridge near the railway-station. The families of the station staff had to be rescued by breaking open the back windows of their quarters with crowbars; 3,000 sleepers for the extension of the line to Ootacamund were swept away; four or five children were drowned in Coonoor; and much damage was done to many of the roads elsewhere.

CHAPTER IX.

PUBLIC HEALTH.

CLIMATE—On the plateau—The observatory on Dodabetta—Effects of the climate—Climate of the Wynaad. DISEASES—Cholera—Small-pox—Plague. MEDICAL INSTITUTIONS—Gúdalúr hospital—Coonoor hospital—St. Bartholomew's Hospital, Ootacamund.

CHAP. IX. CLIMATE. On the plateau.

OF the many surprises and delights which greeted the first Europeans who reached the Nilgiris, the most wonderful and engrossing was its temperate and equable climate; and descriptions of this occupied a most prominent position in their accounts of the plateau. Later on, the obstinate incredulity regarding the coolness and salubrity of these hills which prevailed in other parts of India led to evidence of both matters being reiterated with earnest emphasis by those who had personally experienced them. And finally, when Government began to consider the desirability of establishing an official sanitarium at Ootacamund, the nature of the climate there became of such paramount importance that report after report was called for from the medical authorities and ream upon ream was written in reply.

The early literature upon the subject is thus most extensive. The views which were formed in those days are sufficiently epitomized in Baikie's *Neilgherries*, Surgeon De Burgh Birch's paper published in the *Madras Journal of Literature and Science* in 1838, and a report compiled from the records of the Medical Board's office which was published by Government in 1844; and nowadays the general characteristics of the climate of the Nilgiri plateau, its charm and its virtues, are so well known that the point need not be laboured.

The most eloquent testimony regarding the temperature there is provided by the following statistics (which are expressed in degrees Fahrenheit) of the height of the thermometer throughout the year in Ootacamund and Wellington :—

CHAP. IX.
CLIMATE.

Month.	Ootacamund.*			Wellington.		
	Average maxi-mum.	Average mini-mum.	Mean.	Average maxi-mum.	Average mini-mum.	Mean.
January	64·5	43·5	53·2	67·6	45·2	56·4
February	66·9	44·9	55·3	70·8	47·1	58·9
March	69·7	48·3	58·7	74·1	52·2	63·2
April	71·3	52·0	61·4	75·9	55·9	65·9
May	70·0	53·1	61·0	76·1	58·0	67·1
June	63·9	52·4	57·2	72·2	58·0	65·1
July	61·5	52·2	56·2	71·1	57·9	64·5
August	63·4	52·0	56·9	71·4	57·1	64·3
September	63·8	51·4	56·8	71·3	55·8	63·6
October	64·1	50·6	56·6	69·1	54·8	62·0
November	63·5	47·9	54·7	67·3	52·0	59·7
December	64·0	45·2	53·5	66·2	48·1	57·2
The year ...	65·6	49·5	56·9	71·1	53·5	62·3

* For the five years—July 1901 to June 1906.

These show that the mean annual temperature at these places is respectively 56°·9 and 62°·3 Fahrenheit, against the 83° of Madras. They also exhibit in a marked manner the unusual equability of the climate: at Ootacamund, for example, the average minimum temperature of the warmest month of all the twelve (April) is less than nine degrees higher than that of the coolest (January); the average maximum of the former is less than seven degrees above that of the latter; and the average range of the thermometer during the year between the average maximum and the average minimum for each month is only 16·2 degrees, the maximum difference between these two figures being 22 degrees in February and the minimum only 9·3 degrees in July. These statistics surely point to the Nilgiris possessing one of the most temperate and equable climates on the face of the globe. The rainfall there has been referred to in the last chapter, where it was seen that though, owing to the influence of the hills on the monsoon currents, it varies greatly at the several periods of the year in different localities, the annual average fall at Ootacamund is only 48·35 inches, or not quite so much as that at Madras.

Dr. Baikie justly summarized the climate of the Nilgiri year when he said that 'the cold weather or winter is like the spring of the north of Persia or the autumn of the south of France, and the monsoon is very nearly a mild autumn in the south of England. These two divisions include our whole year.' To be

somewhat more precise, it may be explained that the usual course of the seasons is as under: The first three months of the year are almost rainless and are a procession of bright, clear days during which a dry wind blows from the north-east through January and February and veers round to the south-east in March. This is perhaps the least pleasant and healthy of the seasons; the hoar-frosts which are common at night between December and February have turned the grass on the Downs an unlovely brown, and the absence of rain and the dry wind check vegetation. In April and May good showers appear and the grass, the flowers and the trees start into life again; but the temperature rises to its highest point and the climate is less bracing than at its best. From June to the middle of August the south-west monsoon is blowing—bleak and bitter on the extreme west of the plateau, but tempered by the time it reaches Ootacamund to storms of heavy rain alternating with days of soft Scotch mist which are the healthiest and most invigorating period of the year and during which every description of vegetation grows at tropical speed. By the end of August the monsoon has slackened or disappeared; and September is perhaps the pleasantest month of the twelve, the days being fine but cool and all Nature green and flourishing. In October follows the shorter north-east monsoon until the end of November, when the bright, clear days and frosty nights reappear. A table showing the mean temperature, average rainfall and average direction and daily velocity of the wind at Ootacamund in each month during the five years from July 1901 to June 1906 is given in the margin, and this summarizes, statistically, the climate of that town.

Month.	Mean temperature in degrees Fahrenheit.	Average rainfall in inches.	Direction of wind.	Daily velocity in miles.
January ...	53·2	0·38	N 88 E	89
February ...	55·3	0·43	N 86 E	91
March ...	58·7	1·00	S 76 E	87
April ...	61·4	3·24	N 84 E	102
May ...	61·0	6·22	N 54 E	86
June ...	57·2	6·17	S 79 W	127
July ...	56·2	6·67	S 83 W	162
August ...	56·9	4·71	N 86 W	128
September.	56·8	4·90	N 61 W	107
October ...	56·6	8·17	N 47 E	82
November.	54·7	4·49	N 76 E	71
December.	53·5	1·97	N 72 E	94

Even in April and May, the warmest months, the sun is never too hot for comfort; and in the coldest season all sign of the hoar-frosts disappears (except in deep shade) by nine in the morning. The sun however, mild as it is, tans far more rapidly (probably owing to the dryness of the skin) than the fiercer heat

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of the plains. Sir Thomas Munro, who had a long and intimate acquaintance with hot weathers, declared that he was more sunburnt after a three hours' walk at Ootacamund than he had ever been before in India; and Captain Ward, in his survey report of 1822, says in his quaint diction that the keen air and sun have 'a tendency to make the face and lips very sore; the pain arising from it does in some individuals create fever'—though the latter part of this assertion is seldom borne out by present-day experience.

The sharp, frosty mornings of the cold weather are to many the most enjoyable moments of the whole year; and, though they nip the more delicate of the garden plants, they provide a 'wintering' much needed by certain shrubs and fruit-trees and by no means stop the blossoming of the hardier flowers, which (a rare thing in any quarter of the globe) goes on without intermission throughout the whole year.

Unkind things are often said about the rain and mists of the south-west monsoon; but it is generally admitted that they usher in the most invigorating period of all the year. The wind at that season comes straight in from the sea, only sixty miles away as the crow flies, and analyses have shown that the rain it brings is almost absolutely free of all taint, whereas that which comes across the plains with the north-east monsoon is charged with organic impurity.

Ootacamund has thus points of climatic superiority over any hill-station in India. The following figures sufficiently illustrate the relative lightness of its rainfall and mildness and equability of its temperature compared with those of a few representative sanitaria in other provinces. The advantage it possesses in being situated, not on a steep and cramped hill-side, but on a broad plateau where cross-country riding, driving, hunting and golf are possible, also make for the health of its European inhabitants.

Station.	Elevation in feet.	Annual rainfall in inches.	Temperature in degrees Fahrenheit.		
			Average annual mean.	Highest mean of any month.	Lowest mean of any month.
Ootacamund ...	7,228	48·35	56·9	61·4	53·2
Simla ...	7,224	63·59	55·4	67·7	39·5
Darjeeling ...	7,376	124·38	53·0	61·9	40·8
Murree ...	6,333	55·85	58·3	73·1	41·2
Mount Abu ...	3,945	61·73	69·1	79·7	58·9
Pachmarhi ...	3,528	76·21	70·4	85·1	58·0

CHAP. IX. CLIMATE.

The observatory on Dodabetta.

Meteorological observations were first scientifically conducted at Ootacamund as far back as January 1847 in a building situated on the top of Dodabetta which, in accordance with the wish of the Directors, had been erected for the purpose under the superintendence of Mr. T. G. Taylor, F.R.S., who had been the Company's Astronomer since 1830. The observations (which from September 1849 were made hourly) were continued until May 1859, when on the advice of the then Government Astronomer, who considered that sufficient scientific material had been collected, the instruments (barometer, thermometers, rain-gauge and anemometer) were removed to Coonoor and observations begun there by the Assistant Surgeon.[1]

In accordance with orders passed by Government in August 1866, an observatory was next opened at Wellington under the care of the Cantonment Surgeon, observations beginning in 1870. This remained for many years the only institution of the kind on the hills.

The climate of Wellington, however, differs considerably from that of Ootacamund, and in 1896 Government adopted the view of the Meteorological Reporter to the Government of India that observatories both at the latter place and on the top of Dodabetta would disclose results of much value, more especially with reference to the south-west monsoon; but financial stringency prevented further action until 1900–1901. In that year estimates for the observatory on Dodabetta (Rs. 5,950) and for an open shed for the instruments at Ootacamund were sanctioned; and observations began at the latter place in June 1901 and at the former in June 1902. The instruments on Dodabetta are self-recording, and the observing clerk goes up daily to note results and change the registering sheets. In 1906 it was held to be unnecessary to maintain, in addition to these two, an observatory at Wellington, and this last was closed.

Effects of the climate.

Healthy as is the climate of the Nilgiri plateau, not every form of illness is benefited by a change thither. Affections of the heart and lungs are prejudicially influenced by the altitude, which throws double work upon these organs and thus sometimes induces headaches and sleeplessness among new arrivals. Dysentery, especially when complicated with affections of the liver, is often actually aggravated by a change to the hills; and, since

[1] Further details will be found in Sir F. Price's book. The observations made at Dodabetta between 1847 and 1855 were published by the Government Astronomer and a discussion of the results appears in a paper by Col. Sykes, F.R.S., in the *Philosophical Transactions of the Royal Society*, Part II, 1850. The accuracy of the observations was apparently not of a high order.

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the action of the skin is almost totally checked by the coolness of the air, affections of the liver and kidneys are not benefited. For some reason, again, diseases of the eye usually do better in the warm, moist air of the coast stations than on the Nilgiris, restful as the perennial green of the latter might be supposed to prove.

Visitors often derive less benefit than they might from a short visit to Ootacamund by the rashness of their first proceedings there. It is difficult for them to realize as they swelter under the punkahs at Méttupálaiyam that in three hours the train and tonga will convey them to a clime where the warmest clothing is a necessity; and want of proper preparations to meet the contrast (the best plan is to change into warm clothes at Coonoor) results in chills on the liver. Or, despising the sun, which feels little stronger than that of England, they are less careful about wearing a topi than on the plains, and pay the penalty for confusing the results of elevation with those of latitude. Or, again, tempted by the exhilaration of the hill air, they take unwontedly active exercise, develope an unusual appetite, appease it with an undue supply of the excellent fare which the hills produce, and--reap the consequences. For the first ten days, until they get acclimatized to the sudden change, both humans and horses require the warmest clothing, light exercise and light fare; and those of both species who are less than robust do well to break the journey at the lower stations of Coonoor, Wellington or Kótagiri, so that the change of altitude and temperature may be less sudden.

The Nilgiris, indeed, possesses a great advantage in having three stations which represent three stages of climate—Coonoor, the lowest, with its warmer and moister air; Kótagiri, somewhat higher, cooler and drier; and Ootacamund itself, the highest, coldest and least damp of the three. Delicate persons who cannot stand the high elevation and low temperature of Ootacamund not infrequently find that the two lower and warmer stations suit them admirably; and by changes from one to another of these three places the rain of the two monsoons can be largely avoided, since Ootacamund is partly protected from the north-east, and the other two from the south-west, current.

Climate of the Wynaad.

The climate of the Wynaad is totally different from, and altogether inferior to, that of the plateau. It has already been seen that the rainfall at Dévála is between three and four times as heavy as that of Ootacamund; though temperature is nowhere officially recorded in the Wynaad, the heat may be

declared to be severe in summer; and the whole of the country is a prey to malaria of a bad type. This disease is worst in the hot months; and is partly aggravated by the sudden changes in temperature which occur then towards evening. It is a common thing, at the end of a sweltering day, to see heavy black clouds appear on the crest of the plateau above, and suddenly to feel a chill, moist wind blow down from the heights which lowers the temperature as much as ten or twelve degrees in a few minutes. Among the thinly-clad coolies from the plains this naturally induces chills and internal congestions.

The tendency to malaria diminishes after the south-west monsoon has broken, and the cooler months of the year are free from the disease except in certain particularly pestilential spots, such as Tippakádu.

DISEASES.

Except this Wynaad malaria, no disease can be said to be particularly prevalent in any part of the district.

Cholera.

When Europeans were first settling on the plateau it was proclaimed as one of the great advantages of the new Paradise that cholera—which in those days was far more of a scourge than now and in 1827 had killed the Governor, Sir Thomas Munro, himself—was unknown there. The disease was speedily imported from the plains, however, and not a quinquennium now passes without a certain number of deaths from it. But it is less destructive than on the plains. In 1877, the year of the Great Famine, as many as 476 persons, it is true, died of cholera; but in no other year since then have the casualties reached 80, while in many years they have been *nil*.

Small-pox.

Small-pox has always been known on the plateau and in spite of vaccination (which is compulsory in Ootacamund and Coonoor and is actively performed outside them) its victims number far more than those of cholera. The heaviest mortality on record (327 deaths) again occurred in the disastrous year 1877.

Plague.

Plague did not reach the district until 1903, in February of which year it was imported from Mysore to Gúdalúr and caused twenty deaths by the end of March. It advanced thence to Ootacamund and Naduvattam; and Kótagiri, Kátéri and other places were also infected from Méttupálaiyam. The disease then spread rapidly among the planters' coolies, estate after estate reporting cases. With the close of the working season on the plantations at the end of March, when many of the coolies returned to their villages on the plains, the number of seizures declined; but the outbreak resulted in 191 deaths in all.

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In 1904, and again in 1905-1906, the disease reappeared; but the deaths from it numbered only 29 and 49 respectively. The expenditure on preventive measures was heavy, special staffs being engaged and substantial camps being erected, and the threatened attacks at least conferred the benefit that they awakened interest in sanitary improvement in the towns and larger villages.

MEDICAL INSTITUTIONS.

The civil medical institutions in the district (excluding the hospital at the Lawrence Asylum, which is intended only for the inmates of that institution, and the new Pasteur Institute at Coonoor referred to in the account of that place below) comprise four hospitals at Kótagiri, Gúdalúr, Coonoor and Ootacamund and a dispensary at Paikára. At Wellington is a large military hospital. A hospital was built at Déväla by the planting community in 1876; was transferred to the care of the District Board in 1887, after planting and mining in the Wynaad had fallen on evil days; and was abolished in April 1893.

The Paikára dispensary, which is kept up from local funds, was opened only in 1903. At Kótagiri a dispensary was started by Government so far back as 1832. It was transferred to the charge of the District Board in 1885 and the old building was then demolished and the existing one erected at a cost of Rs. 6,000. The apothecary's quarters and dead-house were added subsequently.

Gúdalúr hospital.

The other three institutions contain separate accommodation for Europeans. The Gúdalúr hospital was originally a quasi-private institution, the planters supporting it by subscriptions and Government supplying the apothecary. The existing building was put up in 1866 at a cost of Rs. 5,800, of which Government gave Rs. 3,400 and the rest was met from private subscriptions. In 1872 the District Board took over the institution. In 1900–1901 a European ward was added at a cost of Rs. 1,500 and a separate hospital for the police was opened on the first day of 1904.

Coonoor hospital.

The Coonoor hospital was opened in 1855 and was originally a Government affair. When the municipal council came into being, it contributed to the upkeep of the institution, but the latter's finances, in spite of local contributions, were not equal to the growing demands upon them, and in 1883 Government consented to make it an annual grant. In 1889 the management was transferred to the municipal council, Government undertaking to contribute Rs.1,300 per annum. In 1896 the institution consisted of two main blocks, one for Europeans and the other for natives, and possessed a maternity and a caste ward, besides an isolation

shed. A new out-patients' room and a new maternity ward were added in 1899 and 1900 and an infectious diseases ward two years later. CHAP. IX. MEDICAL INSTITUTIONS.

In 1899 a committee of European ladies was organized to supervise the general working of the hospital and see to the comfort of the patients, and they have since done a great deal for both, raising considerable sums and spending them in most judicious ways—among others by furnishing the new maternity ward and building a new operation theatre.

St. Bartholomew's Hospital, Ootacamund.

St. Bartholomew's Hospital at Ootacamund is the largest institution of the kind in the district. Its history, and that of its predecessors, are given in detail in Sir Frederick Price's book. It was completed in 1867 at a cost of Rs. 21,556, of which Rs. 12,000 were granted by Government (who held that medical needs in Ootacamund should be chiefly provided, as elsewhere, from local and municipal funds) and most of the balance was raised by private contributions. Government gave the institution the services of a hospital assistant, the municipal council granted it Rs. 500 per annum, and the remainder of the funds necessary to its upkeep was raised by private contributions and the proceeds of periodical charitable entertainments got up for the purpose. It was managed (as it still is) by a committee of which the Civil Surgeon of Ootacamund was executive officer and secretary.

In 1875 Government agreed to contribute annually one half of the sum which the committee might raise by voluntary contributions and suggested that the municipality should increase its grant to Rs. 750 per annum. At this time the hospital consisted of male and female European wards with four and two beds, respectively, a ward for ten native males, another for six native females, an apology for a maternity ward and two special wards which were little used. Sundry out-buildings and a proper water-supply were added in 1875, partly at the cost of Government. In May of that year the sub-committee of ladies which still does such valuable work was first formed, their duties being similar to those of the corresponding body at Coonoor. In 1876 new wards for Europeans and Eurasians who were willing to pay for accommodation were put up from the proceeds of certain fancy bazaars and entertainments, and a casual (now the septic) ward was erected; in 1877 and 1881 other wards were built; in 1884-85 the maternity ward given by Rao Bahádur Tiruvénkatasvámi Mudaliyár, a wealthy abkári contractor, was finished; and in 1889, 1891 and 1895 further additions to the accommodation were made. In 1888 an

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MEDICAL INSTITUTIONS.

apothecary was substituted for the hospital assistant; and in 1898 an Assistant Surgeon for the apothecary. The District Board began contributing to the institution in 1890 and since 1894 has paid it Rs. 750 yearly. The existing maternity ward was presented in 1900 by Khán Bahádur A. R. Háji Fakír Muhammad Sait of Ootacamund, Government assisting; and in 1903 was completed the MacCartie ward, erected from subscriptions (aided by a Government donation) to the memory of Mr. C. F. MacCartie, C.I.E., who had been Collector of the district from 1889 to 1891 and afterwards Private Secretary to the Governor, and was killed in action in the Boer War in 1900, after he had retired.

Numerous other additions and gifts (of which Sir F. Price gives details) have since been made by native Princes and notabilities; the funds of the institution are annually replenished from the proceeds of elaborate entertainments and fancy fairs organized by the committee; and the hospital is now one of the best equipped in Madras outside the Presidency town and can boast a career of constantly increasing usefulness.

CHAPTER X.

EDUCATION.

CENSUS STATISTICS—Education by religions and taluks. EDUCATIONAL INSTITUTIONS--Lower secondary schools for boys—Breeks' Memorial School—Lower secondary schools for girls--The Hobart School--Upper secondary schools for boys—St. Joseph's School, Coonoor—The Stanes School—The Lawrence Asylum—Upper secondary schools for girls—Schools for indigenous castes. NEWSPAPERS.

CHAP. X.
CENSUS STATISTICS.

ACCORDING to the statistics of the census of 1901, the people of the Nilgiris are better educated than those of any other district in the Presidency except Madras town, as many as seventeen per cent. of the males, and five per cent. of the females, within it being able to read and write, against an average in the Province as a whole of twelve and one per cent. respectively.

Education by religions and taluks.

This result is due partly to the fact that Christians, who are nearly always better educated than either Musalmans or Hindus, are especially numerous in the district; and partly to the Musalmans of the Nilgiris being a particularly go-ahead class. The marginal table, which shows the number per cent. of each sex of the followers of each of the three religions who could read and write in 1901, illustrates this clearly. Coonoor and Ootacamund taluks take about equal rank in the matter; but Gúdalúr is far behind either and brings down very greatly the relative position of the district as a whole. Instruction is usually in Tamil, which is the language of the public courts and offices, and next in frequency in English.

Religion.	Males.	Females.
Christians	51	29
Musalmans	36	4
Hindus	10	1
District Total ...	17	5

EDUCATIONAL INSTITUTIONS.
Lower secondary schools for boys.

Of the educational institutions above the primary grade existing in the district at present, lower secondary schools for boys number twelve. Of these, five are maintained for Musalmans and the other seven are 'public' schools in which English is the

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medium of tuition, and include the St. Joseph's and St. Agnes' schools at Ootacamund, and St. Antony's at Coonoor, maintained by the Roman Catholic Mission, the Church Missionary Society's school in Méttuchéri, the Basel Mission's schools at Kéti and Kótagiri and the Breeks' Memorial School.

St. Joseph's school for native boys was started half a century ago and in 1870 was moved into a building in Méttuchéri which had been the mission's chapel before the present Church of St. Mary was erected. It was managed by the parish priest until the beginning of 1906, when three European Brothers of St. Gabriel took over the charge of it. There are now some 200 boys in it.

The St. Agnes' school is intended for the children of poor Eurasian parents. It is situated in the compound of the Convent, is managed by the Mother Superior and has an attendance of about 60.

The Basel Mission school at Kótagiri is chiefly attended by Native Christians but includes also some caste Hindu and 'Panchama' pupils. Its strength is about 90.

Breeks' Memorial School.

The Breeks' Memorial School has had a more chequered history than any of the above. It was founded in memory of Mr. J. W. Breeks, C.S., the first Commissioner of the Nilgiris, who died at Ootacamund in 1872. The year previous to this the boarding school for European boys which had been kept since 1858 (until 1859 at Stonehouse, then at Lushington Hall and Upper Norwood, and from 1862 at Snowdon) by the Rev. Dr. G. U. Pope, the well-known Tamil scholar, had been closed owing to Doctor Pope having been appointed Warden of Bishop Cotton's school at Bangalore.[1] In those days communication with England was far more difficult than now; Dr. Pope's school had been patronized by many of the Europeans at Ootacamund; and its closure was held to be a great public loss. The committee appointed to decide upon the form which the memorial to Mr. Breeks should take thus determined to start a day school for the poorer Europeans and Eurasians, to which, as several natives had contributed to the memorial fund, natives of the better classes should also be admitted.

The subscriptions raised amounted to some Rs. 4,000, and Government and the municipal council gave grants. The

[1] Further particulars will be found in Sir Frederick Price's book, which also gives information regarding other schools established at Ootacamund in former times for European and Eurasian children.

foundation stone of the building for the school, which is now the clerks' room of the Civil Court, was laid on 16th May 1873 by the Hon. Mr. J. D. Sim, C.S.I., Member of Council; and the work was completed at a cost of Rs. 9,487, and the school opened, in June 1874. Government promised a grant of Rs. 150 a month for three years, an English headmaster was appointed, and the school was vested in four trustees—the Commissioner, the Chaplain, the Senior Civil Surgeon and the Vice-President of the municipality.

In the first year of its existence the progress of the institution was so satisfactory that it was decided to enlarge the building. Another Rs. 4,000 were collected by public subscription, Government and the municipality gave further grants, and Rs. 6,000 were raised by debentures. With this money a good building, with a tall tower carrying a clock (purchased from money collected for the reception at Ootacamund of the then Prince of Wales, who, owing to the prevalence of cholera, never came after all), was completed in 1878 by Colonel Morant at a cost of Rs. 16,000. This contained accommodation for 100 boys and the original building held 50.

The school, however, soon failed to realize its early promise. Early in 1878 the headmaster, Mr. Croley, left it and set up a school of his own in Bombay House and Government withdrew their monthly grant of Rs. 150. In 1879 the Commissioner reported that 'the numbers on the rolls had fallen to nearly nothing' and submitted proposals, which were not accepted by Government, for 'the resuscitation of the school.'

In 1885 Government were anxious to acquire the school buildings for the use of the Civil Court, and the trustees agreed to hand them over on condition that Government constructed others in their place and paid off the Rs. 6,000 of debentures which had been raised to help in building them. Government did both; and put up the building by the side of the Wenlock Road below the Army Head-quarters Offices which is the present habitation of the school. The institution flourished no better in its new quarters than it had in the old ones, and in 1888 was in such low water that the trustees induced the municipality to take it over, arguing that the trust deed had always intended that this should eventually be done. This arrangement went on until August 1900, when, under the sanction of Government, the trustees re-assumed control and the council, which was by now heartily tired of the school's lack of success, restricted its assistance, which

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had averaged about Rs. 1,000 in the preceding ten years, to Rs. 600 per annum. At the same time the school, which in 1892 had been raised to the upper secondary grade, was reduced again.

In 1898, in the hope of increasing the institution's popularity, a boarding-house under the headmaster's charge had been opened in connection with it, but very few boys entered this and it was a gloomy failure.

The re-transfer of the school to the trustees in 1900 was not followed by any improvement. The condition in the trust deed requiring natives to be admitted to the institution operated to prevent European and Eurasian parents sending their sons there, while at the same time the fees were too high to enable many natives to avail themselves of the concession. In July 1904 the trustees at length closed the school for want of funds to continue it; and from 1st July 1905 Government vested the institution in the Treasurer of Charitable Endowments as a school for the children of Europeans and East Indians, and decided to arrange for the education of the native children contemplated in the trust deed in some other schools in Ootacamund. A new English headmaster was appointed in the same year and a boarding-house opened, and the hope is entertained that the school may come to be patronized by people residing on the plains and in other parts of India and not have to depend upon the supply of boys available in Ootacamund alone. It is too soon yet to tell how far these hopes will be realized and whether the school will proceed at length to justify its existence.

Lower secondary schools for girls.

Lower secondary schools for girls in the district are four in number; namely, the Lawrence Asylum referred to below, the Church of England Zenana Mission's Boarding Institution, the Hobart School managed by the same body and the St. Stephen's school under the care of the Government Chaplain.

The Hobart School.

The Hobart School, a neat building in a fenced enclosure in the main bazaar, is named after Lady Hobart, who originally promoted it and contributed Rs. 500 out of the Rs. 2,500 which it originally cost. The remainder was raised by subscription and the institution is vested in the Bishop and Archdeacon in trust. The attendance at the school is about 150.

Upper secondary schools for boys.

Upper secondary schools for boys are three in number; namely, St. Joseph's school maintained by the Roman Catholic Mission at Coonoor, the Stanes School in the same town, and the Lawrence Asylum.

St. Joseph's School, Coonoor.

St. Joseph's School is for European boys and has about one hundred children (of whom 70 are boarders) on its rolls. It was opened at Wellington in May 1889 and transferred to Coonoor in 1892, when it was raised to its present grade. The Brothers of St. Patrick, a religious order of Irish monks, took charge of the institution in November 1892.

The Stanes School.

The Stanes School at Coonoor was established by Mr. T. Stanes in 1875 for European and Eurasian children. It was originally intended to be primarily a girls' school, but in 1894, the boys in it out-numbering the girls, it was made a boys' school. The strength is now about 50.

The Lawrence Asylum.

The Lawrence Asylum is named after Sir Henry Lawrence, K.C.B., who early in 1856 offered Rs. 5,000 down and Rs. 1,000 per annum if action were taken within three months to found at some Madras hill-station an Asylum similar to those already established at Sanáwar (near Kasauli) and Mount Abu.[1] In February of that year a meeting held in Ootacamund decided to make every effort to carry out the project, and issued an address and invited subscriptions. From the first, difficulty arose as to the religious principles to be inculcated at the institution; but at length a prospectus for 'the Ootacamund Asylum for the Orphans and other children of European soldiers in India,' on a strictly Protestant basis, was issued. A committee was formed with Bishop Dealtry as its President, and by June 1856 Rs. 3,705 in donations and Rs. 335 in yearly subscriptions had been promised or collected.

The committee sought the aid of Government, but the latter said that their action would depend upon the support received from the army (the Commander-in-Chief objected to the restriction of the institution to Protestants) and the adoption of the rules of the Sanáwar Asylum, from which the committee had proposed to deviate.

These difficulties and the outbreak of the Mutiny led to the abandonment of the project for a time; but in his will Sir Henry Lawrence had commended the scheme to the fostering care of the East India Company and this led to its being revived in 1858. At a meeting held at Ootacamund in August of that year it was resolved to adopt the Mount Abu rules and to invite subscriptions on that basis; a new committee, of which Bishop Dealtry was again patron, was formed; and early in 1859 Stonehouse was purchased for Rs. 22,600 for the institution;

[1] The early history of the Asylum has been taken from Mr. Grigg's *Manual*.

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40 boys and two girls were established there; and children of military parents in Ootacamund were admitted as day-scholars. The donations received amounted to Rs. 37,727, annual subscriptions to Rs. 6,100, and monthly to Rs. 396, and the committee expected to receive Rs. 20,000 from the 'London Lawrence Memorial Fund' and Rs. 6,500 from other sources.

Meanwhile correspondence had taken place between the committee, the authorities, and the Secretary of State regarding the transfer of the institution to the care of Government. Government insisted that the religious principles adopted at Sanáwar must be followed and in January 1860 the committee at length agreed to this.

Subsequently a long discussion occurred as to the desirability of amalgamating with the Lawrence Asylum the Military Male Orphan Asylum at Madras; and eventually, in July 1860, the Government of India recommended the scheme to the Secretary of State, and the Madras Public Works department was called upon to prepare plans and estimates for a building to hold the children of both the Asylums.

The Secretary of State made no reply until 1862, and this delay was prejudicial to the institution, since the knowledge that Government had agreed to take it over resulted in a decline in public subscriptions and in the energy of the managing committee. His reply at length arrived and expressed doubt whether the boys in the Madras Asylum, most of whom were of mixed blood, would benefit in health by a change to the Ootacamund climate, but considered that the extension of the male and female branches of the Ootacamund Asylum deserved every support. In July 1863, however, the Secretary of State, on receipt of further representations, waived his objections to the amalgamation; in the April following the present site at Lovedale was selected for the buildings for the combined institution; and early in 1865 plans and estimates amounting to some eleven lakhs were prepared for erecting them.

In 1869 the buildings were sufficiently advanced to allow of the removal of the children (120 boys and 63 girls) to them from Stonehouse and Norwood; in 1871 the main block was completed; and in September of that year the amalgamation with the Madras Asylum was effected, 220 children being sent to Lovedale from the latter. The proceeds of the funded property of the Madras Asylum, amounting to Rs. 4,89,000, were devoted to the needs of the new joint institution, as were also the profits of the Lawrence Asylum Press in Madras. The income from these two sources is now about half a lakh a year.

Mr. Chisholm was the architect of the new buildings. The boys' part is designed in the Italian Gothic style, and is a two-storeyed construction forming three sides of a quadrangle a feature of which is the campanile, 130 feet in height. The girls were at first placed in the building intended for the hospital.

Much of the building work was done by Chinese convicts sent to the Madras jails from the Straits Settlements (where there was no sufficient prison accommodation) and more than once these people escaped from the temporary buildings in which they were confined at Lovedale. In 1867 seven of them got away and it was several days before they were apprehended by the Tahsildar, aided by Badagas sent out in all directions to search. On the 28th July in the following year twelve others broke out during a very stormy night and parties of armed police were sent out to scour the hills for them. They were at last arrested in Malabar a fortnight later. Some police weapons were found in their possession, and one of the parties of police had disappeared—an ominous coincidence. Search was made all over the country for the party, and at length, on the 15th September, their four bodies were found lying in the jungle at Walaghát, half way down the Sispára ghát path, neatly laid out in a row with their severed heads carefully placed on their shoulders. It turned out that the wily Chinamen, on being overtaken, had at first pretended to surrender and had then suddenly attacked the police and killed them with their own weapons.

In 1884 the benefits of the Lawrence Asylum were extended by the admission to it of the orphan children of Volunteers who had served in the Presidency for seven years and upwards, it being however expressly provided that children of British soldiers were not to be superseded or excluded by this concession.

In 1899 the standard of instruction in the Asylum was raised to the upper secondary grade. In 1901 the rules of the institution, which had been twice altered since 1864 to meet the changes which had occurred, were again revised and considerably modified. They are printed in full in the annual reports.

In 1903, owing to the South Indian Railway requiring for its new terminus at Egmore the buildings then occupied by the Civil Orphan Asylums of Madras, Government suggested that these should be moved to the premises on the Poonamallee Road in which the Military Female Orphan Asylum was established and that the girls in the latter, who numbered about 100, should be transferred to the Lawrence Asylum. The transfer was

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effected in October 1904, new buildings costing Rs. 72,000 being put up at Lovedale to provide the increased accommodation required and the income of the Military Female Asylum being applied to the uses of the combined institution.

The Asylum is now managed by a committee consisting of the Colonel on the Staff commanding the Southern Brigade (Chairman), the Collector, the Senior Medical Officer at Wellington, the Superintendent of the Cordite factory, the Commandant of the Wellington Dépôt, the Civil Surgeon of Ootacamund, and two other officials and three non-officials resident at Ootacamund appointed by Government. The Secretary to this committee is the Principal of the Asylum, who has usually been a Clergyman of the Church of England. The expenditure on the male branch is about Rs. 1,10,000 per annum, of which Rs. 28,000 is derived from the Government grant-in-aid, Rs. 39,000 comes from funded property and Rs. 27,000 from the Lawrence Asylum Presses at Madras and Ootacamund; and that on the female branch is about Rs. 50,000, of which the Government grant provides Rs. 19,200.

One of the express objects of the Asylum is to provide the children in it with a training which will enable them to earn a livelihood. Prominent parts of its course of instruction, therefore, are the technical classes, which are the only ones held in the district. Telegraphy, tailoring, carpentry, shorthand, typewriting, music and drawing have all been taught at different times. Efforts are also made to keep touch with the pupils after they have left the Asylum and thus assist them in earning their livings. The boys furnish a detachment, two companies strong, to the Nilgiri Volunteer Rifles.

Upper secondary schools for girls.

The upper secondary schools for girls in the district are all for Europeans and Eurasians and include St. Joseph's Convent School at Coonoor, and, at Ootacamund, the Nazareth Convent School and the St. Stephen's Collegiate High School and Shedden House School, both of which latter are managed by the Sisters of the Church from the Kilburn Sisterhood.

St. Joseph's at Coonoor was started in 1900 and is under the management of six Sisters of St. Joseph de Tarbes. It includes a boarding-house and has about 40 pupils.

The Convent School at Ootacamund is managed by the European nuns there and contains about 50 boarders and day-scholars, many of whom belong to the upper classes of society.

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St. Stephen's Collegiate School, near St. Stephen's Church, has some 60 children on its rolls. The teaching is done by two Sisters of the Church and three assistants, and the Sisters also manage a connected boarding-establishment at 'Bramley Hyrst,' near by, and an orphanage and school under the control of the Chaplain, in which some 40 children are educated, clothed and fed free, chiefly from voluntary subscriptions.

Shedden House School is intended for children of the better classes and contains about 50 pupils. The teaching staff consists of two Sisters, three resident governesses and other assistants. The school is not inspected by Government officials but is under the general control of the Bishop of the diocese.

Schools for indigenous castes.

The Badagas, Kótas and Tódas of the hills are classed by the educational authorities among those 'backward classes' for whose benefit special educational effort is required; and at present some 40 schools are specially maintained for them, in which about 1,270 pupils are under instruction.[1] The Tódas have never displayed any more enthusiasm for learning than they have for other ways of improving their material condition, and a special school started for them by the Church of England Zenana Mission Society had to be closed in 1904 owing to the lack of interest they took in it. Government have recently sanctioned the opening of a new school for them at Paikára and the institution of several scholarships to encourage them to educate their children.

NEWSPAPERS.

Ootacamund has had its full share of newspapers. A list of them, with the approximate dates of their births and deaths, is appended :—

Name.	From	To
Eclectic and Neilgherry Chronicle	1860	1861
Neilgherry Star	1862	1863
Neilgherry Excelsior	1863	1871
South of India Observer and Agricultural Times ...	1867	1873
South of India Observer	1873	1894
Sathiabothini, a Tamil monthly periodical	1872	1874
Neilgherry Courier	1873	1876
Ooty Times	1884	1885
Nilgiri Express	1886	1889
Nilgiri News	1893	1902
South of India Observer	1902	...

Except the *Ooty Times*, which during its short life aspired to a daily edition, all of them have been published either weekly,

[1] The curious will find a sketch history of early efforts in this direction, which began as far back as 1839, in Mr. Grigg's *Manual*, 423–6.

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NEWSPAPERS.

twice a week or three times a week. The *Neilgherry Excelsior* was incorporated at the end of 1871 with its rival the *South of India Observer and Agricultural Times.* The second part of the title of this latter was due to its devoting much space to the interests of the planting community, who for some time poured forth their grievances regularly in its columns. It did useful work in promoting the protection of the gameb irds and animals on the hills and in its columns appeared the well-known series of letters on that subject by General Richard Hamilton ('Hawkeye') which are referred to on p. 33 above. In 1873 its title was curtailed to *South of India Observer*, but it continued to devote special columns to matters connected with tea, coffee and cinchona and published a weekly 'Planters' sheet' in which articles from other sources on these subjects were reprinted. In 1894 it was incorporated with the *Nilgiri News*, which also set itself to cater specially for the planters. This paper changed hands in 1902 and its title was altered to *South of India Observer.* It is still in existence and now appears weekly.

CHAPTER XI.

LAND REVENUE ADMINISTRATION.

CHAP. XI.
REVENUE HISTORY.

THE history of the administration of the land revenue on the plateau differs altogether from that in the Wynaad and the Ouchterlony Valley, and the two must be separately considered.

ON THE PLATEAU.

On the plateau, the subject divides itself naturally under two heads; namely, revenue settlements with the hill castes and those with Europeans. These must also be treated separately.

Settlements with the cultivating hill castes.

Settlements with the hill castes were again of two classes; namely, those with the Tóda graziers and those with the rest of the population, who are cultivators; and the latter may first be disposed of.

When the plateau was first ceded to the British in 1799 by the treaty of Seringapatam already (p. 102) referred to, it formed part of the Dannáyakankóttai taluk of the Coimbatore district. Haidar Ali and his son Tipu Sultan had collected revenue in it; but except that their officers acted most mercilessly to the hill people, sometimes despoiling them of the whole of their harvest and forcing them to carry their own plundered property down to Dannáyakankóttai, little is known of the system (if system there were) on which they levied their assessments. They seem to have charged fixed money rates on all land held by a ryot, whether it was cultivated each year or not, and when the district came into British hands the hill people had become terribly impoverished and were usually heavily in arrear with their payments.

The first settlement after the transfer of the country was begun in December 1799 by Major McLeod, Collector of Coimbatore, and was based upon the karnams' accounts. Convinced that

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these documents were usually inaccurate or false, Major McLeod obtained sanction to survey the hills, and the work was supposed to have been carried out in 1800–01. In 1819 Mr. Sullivan however reported that this survey was a farce; 'the extreme inclemency of the climate frightened the surveyors and prevented them from doing more than making an estimate of the quantity and quality of the land and fixing the old rates of teerwa upon it.' He obtained sanction to a fresh survey, but apparently this was never completed. The average revenue up to 1813 was Rs. 14,762, but during the next fourteen years it fell to Rs. 6,499. At one time the right of collection was leased to a renter.

The rates of assessment were undoubtedly low (they appear to have ranged from 14 annas 9 pies per acre to 3 annas 8 pies and to have varied with the appearance of the crop at harvest-time, when an estimate of the probable outturn was made by the taluk gumastahs and karnams)[1] and the ryots benefited much by certain curious concessions which of old formed part of the revenue system of Coimbatore; namely, the 'bhurty,' or shifting, system, the 'ayan' grass allowance and the 'grazing pattas.'

The 'bhurty' system.

Under the bhurty system, a ryot was allowed to hold tracts as much as five (or even ten) times greater than the extent shown in his patta and for which he paid assessment; to pay only for that portion of them which he actually cultivated each year; and to retain without payment a preferential lien on plots formerly tilled by him, which he could return to and cultivate in rotation. These plots might be miles apart and even in different náds; but if 20 acres only were entered in the patta the ryot only paid for 20, and yet claimed rights of occupation, to the exclusion of all other applicants, in perhaps 200 acres made up of scattered fields in which he selected each year the 20 acres, in one or many pieces, which he meant to cultivate and pay for, leaving the rest fallow.

The system would not have been quite so pernicious had the extents in which these occupancy rights were claimed been properly limited; but in the absence of any demarcation or proper survey they were neither defined nor even identified; and claims to them usually depended merely upon the assertions of the nád headmen and the connivance of the subordinate revenue officials. If these people did not wish an applicant for land to be successful, they could easily set up some one to declare that the area selected was his bhurty land and there was no one to gainsay them.

[1] Ouchterlony's survey report, 26, 39.

'Ayan' grass and 'grazing pattas.'

The 'ayan' grass allowance was a concession whereby a ryot obtained possession, under this name, of a certain portion, not exceeding one-fifth, of his holding as fallow at one-fourth of the proper assessment. This enabled him to defeat any applicant for a portion of his nominal holding by declaring that that portion was his ayan grass land. 'Grazing pattas' were granted at one-fourth the usual assessment for inferior land and permitted a ryot to hold the land covered by them until it was required for cultivation by himself or another. But the ryot had a preferential right to such land; and this again enabled him to defeat any one who wished to obtain possession of it.

These three concessions rendered it most difficult for Europeans wishing to start coffee or other estates to obtain any land. Indeed it might 'safely be said that, with the exception of the home-farm lands of each hamlet, the rest of the area, cultivable or uncultivable, forest or swamp, included within the bounds of the several náds or rural divisions was practically at the disposal of the village elders and subordinate revenue officials.'

Nominal abolition of the bhurty system, 1863

In 1862 the opposition of these economically unsound systems to the development of the district was brought prominently to notice; and after much correspondence between the Collector, the Board, the Government and the Secretary of State it was decided in 1863 that the bhurty system should be abolished; that, as in other districts, a ryot should have no claim to land not mentioned in his patta and for which he paid no assessment; and that as compensation for the withdrawal of a long-standing concession the rates of assessment should be reduced. Assessments above As. 13 per acre were lowered to As. 10; those between As. 13 and As. 9 to As. 8; between As. 9 and As. 6 to As. 6; between As. 6 and As. 4 to As. 4; and those below As. 4 to As. 2. These reductions amounted on the average to about 25 per cent.

In May 1864 the Collector (Mr. Grant), who had been directed to carry these orders into effect, said of the bhurty system: 'It has ceased, and the people now regard it as a bygone system; it is never alluded to.' But as a matter of fact it had by no means ceased. There was no proper survey to check the Badagas' holdings, and though they doubtless avoided all allusion to the bhurty system they practised it as freely as ever; they were in the comfortable position of having lost none of their former privileges while they had at the same time gained a large reduction in their assessments.

Abolition of plough and hoe taxes.

Mr. Grant also introduced the new rates into the Kundahs, which in 1860 had been transferred from the Malabar district.

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Up to then the revenue system in force there had consisted in levying a tax of Re. 1 or Re. 1–8 for the right to drive a plough (*ér*) and of 4 annas to 8 annas for permission to use a hoe (*kottu*), and was consequently called *érkádu kottukádu*. Under this, the so-called patta issued to the ryot was really no more than a license to use one or more ploughs or hoes as the case might be; it specified the amount to be paid, but in no case defined the extent or position of the land which might be cultivated; and the ryot used his implements when and where he pleased. No restrictions, even on the felling of forests, were imposed; and hill-sides and valleys were cleared promiscuously.

Mr. Grant was again confident of the value of his action. 'The door to much fraud has been closed,' he declared, 'and the sources of endless disputes and false claims to lands have been swept away; whilst the Burghers (Badagas) and Government have both immediately benefited, the former by the reduction of assessment and the latter by an increased revenue.' But as a matter of fact the work had been so indifferently performed that the particulars of area entered in the new pattas were utterly unreliable; no boundaries were given; and the only clue to the land was its indefinite traditional name. 'Sources of dispute and false claims to lands, so far from being swept away, were rather more numerous and fruitful than before,' and twenty years later the Settlement Officer found that the plough and hoe tax system was still actually in existence in the village of Kinnakorai.

Settlements with the Tódas.

We may now turn to the Tódas. The earliest English settlers on the plateau, and notably Mr. Sullivan, strongly advocated the absolute proprietary right of these people to the whole of the plateau, urging that they were the earliest arrivals there; had pastured their buffaloes on its grass for years without let or question; and had only permitted the Badagas to cultivate land on the hills on condition that they paid the Tódas the rent in grain called *gúdu* which they still annually handed over. A rival school, led at first by the Governor, Mr. S. R. Lushington, argued that throughout India the proprietary right in the soil belonged to the State; that the Tódas had from time immemorial paid to the ruling power a tax on all their female buffaloes as well as an assessment on the grazing land in the immediate neighbourhood of their mands; and that the *gúdu*, which literally means 'basket of grain,' was paid by the Badagas to other tribes as well as to the Tódas, was paid to the latter only by some of the Badagas, and was apparently less a rent for land

occupied than a free-will offering to avert the displeasure of the Tódas, who were supposed to possess malignant powers of sorcery by which they could compass the ruin of those who did not sufficiently propitiate them.

Private individuals at first bought land at Ootacamund from the Tódas as though the latter were the possessors of the freehold thereof (Mr. Sullivan purchased the site of Stonehouse in this way) and Government at first tacitly recognized the titles so obtained. They first dealt formally with the question in 1828, ordering that European settlers should pay the Tódas, for all areas occupied, 'compensation for the usufruct of the land which they have hitherto enjoyed' at the rate of sixteen times the annual assessment paid by the Tódas for pasture; but by 1831 (when Mr. Sullivan had ceased to be Collector) the claims of the tribe were forgotten again and Eurasian settlers were granted waste without payment of any such compensation. In 1835 Mr. Sullivan, who was now in Council, revived the question. His views bordered on the romantic, for he urged that the Tódas had possessed a janmam right to the plateau land from a remote antiquity; but he carried the Government of the day and the Court of Directors with him. Fresh instructions were issued re-arding the manner in which the Tódas' supposed rights should be respected, and after much wrangling with these people (who were by no means slow to appreciate the position to which they had been elevated) an annual sum of Rs. 150 (apparently interest at 5 per cent. on the total amount) was ordered to be paid them as compensation, at the rate prescribed in 1828, for land which had been taken up in the cantonment of Ootacamund. This sum is still annually disbursed to the Tódas of Ootacamund and Nanjanád, being treated as a set-off against the amounts due under certain pattas of theirs; and Rs. 165 is also annually paid to the Tódas (and Badagas) of Jakkatalla for land taken up subsequently for the Wellington cantonment.

In 1840 the pendulum swung back again and Mr. C. M. Lushington, now Senior Member of Council, vigorously and ably attacked Mr. Sullivan's position. In 1843 the question was once more referred to the Directors and the latter set it finally at rest in their despatch of June of that year, which held that the Tódas possessed nothing more than a prescriptive right to pasture their herds, on payment of a small tax, on Government land. The Court desired that they should be secured from interference by settlers in the enjoyment of their mands and the spots appropriated to their religious rites, and pattas were accordingly

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issued granting to each mand three ballas (11·46 acres) of land. In 1863 Mr. Grant obtained permission to make an additional allotment of nine ballas (34·38 acres) to each mand on the express condition that this should be used only for pasturage and that neither it nor the forest on it should ever be alienated. The reservations thus made (which in many cases now exceed the twelve ballas originally granted) are regarded as the inalienable common property of the Tóda community; the practice of leasing them to Badagas and others for cultivation was checked in 1882 by the imposition of penal assessment on any patches so treated; and, as has been explained above (p. 212), they are now controlled by the Forest department under a set of rules which, while they ensure to the Tódas the enjoyment of their ancient privileges in them, check all encroachments upon them by any others.

And with European and other immigrants.

The first European settlers on the hills, as has been seen, often bought land from the Tódas. For some years no assessment was levied from them, but in 1828 they were required to take out leases from Government and pay the usual quit-rent charged on such grants, namely $1\frac{1}{2}$ pagodas (Rs. 5–4–0) on each cawnie (1·32 acre) of land, or Rs. 3–15–0 per acre. Many properties in Ootacamund are still held under the old grants then made. Rules, which were never enforced, were drawn up at the same time restricting the space to be allotted to each dwelling-house to two cawnies, or about $2\frac{2}{3}$ acres. The above high rate of assessment was at first held to apply to all land, even that held for agricultural purposes, in the uplands of Tódanád; but in 1836, at Mr. Sullivan's suggestion, the rates on cultivated land at a distance from Ootacamund were reduced to those paid by the Badagas, while those on land cultivated by immigrants within a certain definite area round the town, known as 'the settlement of Ootacamund,' were charged special double rates in view of the fertility of the soil and the proximity of the market for produce.

In January 1837, it having been brought to notice that the rates of quit-rent pressed heavily upon house-owners in Ootacamund, Government decided to charge Rs. 5–4–0 only for the first cawnie of any building grant and Re. 1–2–4 per cawnie for the rest of the land in it. In 1842 an elaborate manual of rules for the disposal of land was drawn up, but it did not come into force until the completion of Major Ouchterlony's survey in 1847. It provided for the grant of thirty years' leases of land for agricultural purposes and ninety-nine years' leases, renewable every thirty-three years, for building sites. Many conditions now rarely observed were inserted in these leases; one in particular provided

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that on their expiration the land, with the buildings on it, should revert absolutely to Government. Some modifications were introduced in 1858 and in the following year the redemption of the quit-rent was allowed to be made at twenty (subsequently raised to twenty-five) years' purchase. This privilege was withdrawn, however, in 1899.

The Waste Land Rules of 1863.

The Government had for some time been desirous of introducing some method of auctioning land, but the abolition of the bhurty system already referred to was a necessary preliminary to any such plan. So long as large and indefinite areas could be claimed to be some one's bhurty and there was no evidence on the point one way or the other except the testimony of the claimant's relations and friends, it was almost impossible for any outside applicants to get land from Government. When the bhurty system was at length done away with, the Waste Land Rules of 1863, which had long been under discussion, were introduced (waste land being defined as that in which no rights of private proprietorship or exclusive occupancy existed) and an Act was passed to facilitate the disposal of claims to areas put up for sale under them. They provided that land applied for was to be demarcated and surveyed and then sold to the highest bidder subject to an upset price to cover the cost of survey and to an annual assessment of Rs. 2 per acre for forest land and Re. 1 for grass.

The Waste Land Rules once introduced, it was laid down that no one, European or native, could thenceforth obtain a grant of any land by any other means. In each of the first three years after their introduction between 2,000 and 3,000 acres were sold under them to European planters, but they were never popular and the sales soon fell off. In no year between 1867 and 1874 did the area sold exceed 850 acres and in 1868–69 it amounted to only four acres. The reasons for this were partly that owing to the inadequacy of the district staff great delay occurred in the survey and sale of any land applied for, and partly that there was nothing to prevent an outsider appearing at the sale and outbidding the applicant for land which he had taken much time and trouble to select. Sometimes also the applicant would be run up through private enmity; sometimes by owners of adjoining land who did not want him to come competing with them for the small available stock of labour and manure; and sometimes by speculators who gambled on the chance of his afterwards agreeing to buy the land from them at an enhanced price rather than face all the delay, uncertainty and expense involved in making a fresh application.

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In 1871 the rate of Re. 1 per acre for grass land was reduced to 8 annas and the assessment on forest land was remitted for the first five years from the date of purchase on the Nilgiris and for the first three years in the Wynaad (where coffee came to maturity more quickly) so that buyers should have to pay nothing for their land until it was bearing a crop. In 1874 grass land taken up for tea or firewood plantations was similarly exempted; in 1883 this concession was extended to land acquired for coffee or cinchona also; and in 1904 to any special products of economic importance which might be specified by Government. In 1899 the rules were partly revised, and special conditions now govern the acquisition of land within the limits of Ootacamund and Coonoor.

Masinigudi an exceptional tract.

It should be mentioned that neither the Waste Land Rules nor Mr. Grant's simple rates of assessment of 1863 were ever introduced into the tract round Masinigudi between the northern foot of the plateau and the Moyár. This area has always been, and still is, administered on the ordinary ryotwari system usual elsewhere on the plains.

The survey of 1870-80.

Up to 1870 isolated blocks of land applied for under the Waste Land Rules and properties in the three chief towns had been surveyed by special staffs, but no general survey had been undertaken since Ouchterlony's in 1847. In 1870 this general survey was ordered and begun; but the want of proper village establishments, the unhealthiness of the district and the interruptions caused by the Great Famine of 1876–78 so much delayed matters that it was not until 1880 that the work was completed.

One of the chief disclosures which resulted from it was that the bhurty system, which Mr. Grant had declared to be dead so far back as 1863, was in reality almost as full of vitality as ever. The Badagas had bought scarcely an acre under the Waste Land Rules, and yet their holdings were much larger than those shown in the 1863 pattas and they claimed further additional areas on the old plea that they had recently cultivated them and so had a prescriptive right to them. They were treated with liberality, and allowed to hold whatever land they had cultivated and also adjoining waste blocks.

THE EXISTING SETTLEMENT OF 1881-84.

In 1881 the survey was followed by a settlement. This was conducted by Mr. (now Sir Ralph) Benson, I.C.S., and to his report on its completion in 1884 this chapter is greatly indebted. It was indeed high time that some order and method was introduced into the revenue accounts and village establishments.

'There were no revenue villages, for the old náds (sometimes called villages) more properly corresponded to taluks or divisions. Tódanád

alone contains 217,000 acres. There were hardly any village establishments and such as existed were miserably remunerated. Scarcely a headman in the district could read, and the land revenue accounts of all lands, except those in the quit-rent and plantation registers, were supposed to be kept by four karnams paid about Rs. 3 per mensem each. As a fact, it may be said that no accounts were kept except the chitta (individual ledger) and some imperfect collection accounts . . . . The quit-rent and plantation registers, which related mostly to the lands of European planters or to lands in Coonoor and Ootacamund, were kept in the Commissioner's office, and, as the bills for assessment were also issued from his office, much of his time was spent in matters which would properly devolve on the tahsildars. It often happened, too, that, between these several registers kept by the karnam and the Commissioner, land escaped registration (and assessment) altogether. Each office thought that the land was in the other's register. There were no general registers for fixed areas, nor did the registers usually state the tenure on which any land was held. Some lands were ordinary patta lands. Others were held on restricted pattas, of which there were three classes :—those issued to (1) Europeans, (2) Tódas, and (3) Irulas. Other lands were held under Waste Land Rules, deeds, or under permanent pattas or under ninety-nine years' leases, or (in Wellington) fifty years' leases. There were also quit-rent lands not held on lease, and free-holds and firewood allotments, and lands held on special deeds or terms. In such a multiplicity of titles it is easy to see how important it is that the registers should be clear and well kept.'

Methods adopted thereat.

The settlement thus had to deal with a condition of things differing widely from the normal; and consequently its methods were quite unlike those of the ordinary settlements on the plains. Soils were not classified; nor were the existing rates of assessment altered. The work consisted chiefly in the revision of the revenue accounts and the proper entry in them of all land in occupation and the assessment chargeable thereon. A set of rules governing the procedure to be followed was drawn up by the Settlement Commissioner and the *modus operandi* was briefly as follows :—

'(1) Each nád, or division, was sub-divided into villages of convenient size for administrative purposes, natural or well known boundaries being adopted as far as possible, and due regard being paid to area, population, revenue and such like matters. The four náds were thus split up into thirty-six villages.

(2) A map of the village was then obtained from the survey department and the fields were numbered consecutively.

(3) With this map and the survey registers relating to the lands in the village, a subordinate was sent to the village, and, with the assistance of the revenue officials, he made a preliminary inquiry into all matters in dispute connected with the survey or settlement, and

CHAP. XI. THE EXISTING SETTLEMENT OF 1881–84.

with the registration of transfers of pattas, applications for land, improper inclusion of forests in private holdings, statistics of cultivation, etc.

(4) On his return to office he reported particulars of each matter to the Settlement Officer and received orders on doubtful cases which required no inspection of the land or further inquiry. The matters requiring inspection or further inquiry were noted by the Settlement Officer, and then the village was inspected by him in detail. Grants of land applied for under the Settlement Rules were disposed of, or, if necessary, reported to the Collector or Government. Village grazing lands were selected and set apart. Reserves for roads, streams, swamps and forests, not previously made, were selected and recorded. Lands available for sale were also selected and recorded. Lists of new demarcations required, owing either to omissions or errors in the original surveys, were prepared, and the necessary detailed orders were sent to the Survey Officer for execution. Government lands claimed without title were inspected and the necessity (or otherwise) of resisting the claim was considered. Where valuable forests were included in private holdings the rights of Government were asserted, and where large excess areas were included and there appeared no objection to the occupation of lands, a patta was issued on such terms as to future assessment and payment of arrears or penalty as was considered reasonable, the Collector being consulted in all important cases. Inam lands were dealt with in accordance with G.O., No. 212, dated 11th February 1884.

(5) All the above points having been settled, and the new surveys having been made, a general register of all the lands in the village was framed, showing not only all private holdings with the area, rate of assessment and total assessment payable thereon and the tenure on which held, but also showing all Government lands ranged under their appropriate heads as reserved forest, swamp, road, stream, grazing ground, available for sale, etc. The distinction between lands registered in the Collector's office and in the karnam's was abolished, and all the lands (including many which had previously escaped registration altogether) were entered in the one village register.

(6) Brief descriptive memoirs of each important estate were then prepared in communication with the proprietors.

(7) From the general register the chitta (or individual ledger) was prepared, showing for each landowner in the village the several lands held by him, and he was furnished with a copy of this, under the name of the settlement rough patta, and asked to bring to notice any errors or omissions within a fixed time.

(8) After all appeals had been heard, the maps and registers were finally revised, abstract statements prepared, a descriptive memoir and register in diglott written up and sent to be printed with an eye sketch of the village bound up with the register.

(9) The map of the village, numbered to correspond with the register, and prepared on the scale 16 inches = 1 mile, was then sent to the Survey office to be lithographed and sold to the public. The memoir and register, on being printed, was also made available for sale to the public and was supplied, with a copy of the map, to all the public offices of the district.'

Village establishments revised.

To provide for the proper future maintenance of the accounts and registers thus drawn up it was absolutely necessary to strengthen the village establishments, which were small and inadequately paid by assignments of revenue. A complete scheme for their revision was accordingly prepared by the Settlement Officer and sanctioned by Government; and the Village Cess Act of 1864 was specially extended to the district by Act I of 1883.[1] Certain modifications of this scheme were made in 1895.

Features of the settlement.

One of the most important (and most popular) features of the settlement was the grant thereat of unallotted lands to those who applied for them. Native pattadars were granted, at an assessment of 10 annas per acre, such land as they wanted round their holdings to a total extent of 4,376 acres; and owners of estates were given, at Rs. 2 per acre, areas which they required to round off their boundaries, provide grazing for their cattle and so on, to a total extent of 4,075 acres. Both classes obtained this land with less trouble and expense than would have been involved if they had bought it under the Waste Land Rules, and as they would never have taken it at all under those rules Government gained by the payment of assessment on a large area which otherwise would have remained unappropriated. Every grant was inspected by the Settlement Officer to see that it included no forest and was otherwise unobjectionable. Village grazing-grounds to the extent of 24,061 acres were similarly inspected and set aside for communal use; and 18,366 acres more were classified as available for sale under the Waste Land Rules.

The survey had disclosed an excess of no less than 75·5 per cent. in the extent actually occupied over that shown in the old revenue accounts, and (including the grants above referred to) the net increase in area and assessment brought about by the survey and settlement was 56,890 acres assessed at Rs. 45,813, the latter figure being 136·2 per cent. more than the former revenue.

The average assessment on land held by the indigenous cultivating castes, as fixed at the settlement, was only a fraction over six annas an acre; but on the other hand they were now for

[1] A short history of the old village establishments will be found in Mr. Barlow's letter in G.O., No. 142, Legislative, dated 28th November 1882. The village cess was abolished with effect from 1st April 1906.

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the first time obliged to pay for all the land in their occupation, and since much of the soil is too poor to be regularly cropped they had to pay the assessment on their fallows from the produce of the land they actually cultivated. Until the settlement was introduced, the old 'bhurty' system had remained in full force and such fallows paid nothing.

The general results of the survey and settlement were summed up as follows by Mr. Benson:—

'All private holdings have been defined, mapped and registered. Every man now knows his own, and can have a plan of it for a few annas. The long pending disputes between Government and landholders as to their boundaries have been settled. Large areas of forest, wrongfully claimed, have been recovered for Government, and titles (so far as pattas are titles) have been granted for the areas admitted at settlement to belong to claimants, thus rendering their properties more valuable and more marketable. Considerable areas have been granted to private persons under the Settlement Rules, to their no small satisfaction and the increase of the public revenues. The land revenue accounts have been thoroughly revised, and efficient village establishments have, for the first time, been organized to keep the accounts and attend to the collection of the revenue and other cognate duties. The areas available for sale in the demarcated portions of the district have been registered, so that both the public and the district officers can know them merely by examining the maps and registers. In like manner all the lands reserved as forest, swamp, road, stream, etc., and the areas set apart as village grazing grounds in the demarcated portions of the district have been defined and recorded, both on the ground and in the maps and registers.'

Settlement of Masinigudi.

Masinigudi village, as already explained, had always been treated differently to the land on the plateau and the settlement there was revised subsequently on the ryotwari system. Land in occupation was surveyed and demarcated in 1885–86 and the seventeen rates of assessment (two for wet and fifteen for dry land) in force were reduced to nine, wet land being charged either Rs. 3 or Rs. 2 per acre and dry land seven rates ranging from Rs. 2–8 to 4 annas.

REVENUE HISTORY OF THE WYNAAD.

The former revenue system.

The earliest British revenue settlement of the South-east Wynaad was carried out about 1806, shortly after the death of 'the Pychy rebel' referred to on p. 105 above, by Mr. Warden, the Principal Collector of Malabar, within which district the Nilgiri Wynaad then lay. His method consisted in ascertaining by experiment the produce of seed sown in each amsam (in the Nilgiri Wynaad this was fixed at nine-fold); finding out the number of potis of seed per acre which was sown by the ryot (a poti equals 30 seers); multiplying this by the figure nine (the

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multiple outturn) to get the gross produce; deducting therefrom three potis per acre for cultivation expenses; dividing the remainder equally between the ryot, the janmi and Government; and commuting the Government's one-third at rates varying with local circumstances. The obvious disadvantages of this method were that it was impossible to find out how much seed really was sown; that the figure of multiple outturn was the same for all soils--good, bad or indifferent—in each amsam; and that the commutation rates varied at the will of subordinates. Partly to meet these drawbacks, the amount of seed sown was allowed to be arbitrarily assumed and lowered or raised according to local circumstances, such as the poverty of the land or its liability to damage by elephants; and the commutation rates were fixed for each amsam. But clearly these steps did not remove the objections to the system, for the amsam officials who were left to fix the amount of seed sown were often themselves large proprietors who were interested in putting it as low as possible, and it was not fair to have the same commutation rate for remote villages as for those near large centres. Eventually the assumed amount of seed sown was gradually so reduced by the amsam officials that it came to only one-half (or even one-fourth) of the actuals, and the Government share of the crop was diminished in proportion. Subsequently janmabhógam was separately assessed on land which was Government janmam and in 1860 the rate of this was fixed at 8 annas per acre on all occupied land, whether it was cultivated or not. Juggling with the figures by the amsam officials however resulted in even this fixed payment being much reduced in practice.[1]

Dry land was not assessed until 1863, when it was charged Re. 1-4-0 per acre when spasmodically cultivated or 10 annas per acre if held permanently. The Government janmabhógam on this was again fixed at 8 annas per acre. In 1860 land cultivated with coffee was assessed at Rs. 2 per acre from the third year after planting *plus* the usual janmabhógam. The South-east Wynaad was transferred to this district in 1877 and these systems continued until the present settlement was begun in 1886.

The first survey.

The first survey of the Wynaad was begun in 1859 and carried on in a fitful and desultory manner under the supervision alternately of the Settlement department and the Collector of Malabar until 1870, when it was made over to the Survey department. It was not completed until 1879 and was brought up to date in 1886.

[1] Interesting detailed particulars of this casual system will be found in Mr. Castlestuart Stuart's report in B.P., No. 2869, dated 13th October 1885.

CHAP. XI. REVENUE HISTORY OF THE WYNAAD.

The escheat enquiry.

Between 1884 and 1885 a detailed enquiry was made into the extents of land which had escheated to Government owing to their having belonged to the Pychy rebel and his followers and having accordingly been declared to be sequestrated. The matter had long been discussed academically and the necessity for speedily concluding it in earnest was emphasized by the gold-boom of 1879–82, during the course of which land which was apparently Government property had been leased and sold to the mining companies by the local janmis.

The results of the enquiries then made have all been printed and go to show that there is reason for supposing that janmam right above the gháts was a creation of British administration and due to insufficient knowledge among the earlier officers of the true position of affairs. However this may be, the net up-shot of the enquiries was that, of the three amsams comprised in the Nilgiri Wynaad, Nambalakód was declared to be the janmam property of the Nilambúr Tirumulpád and 27 per cent. of Munanád and 1 per cent. of Chérankód to be similarly the janmam land of the Wandúr Nambúdripád, the Nelliálam Arasu and two other smaller proprietors. The Ouchterlony Valley is also the janmam property of the Nilambúr Tirumulpád.

THE EXISTING SETTLEMENT.

Its principles.

The necessity of permanently securing the results of this escheat enquiry by the preparation of regular and complete land registers of the usual kind led to the resettlement of the Wynaad. The work was begun in 1886.

The following are the principles upon which it proceeded: Land was classed as wet or dry, the former including the numerous paddy-flats and swamps locally known as *vayals*, *nilams*, or *khandams*; wet land was assessed at nine rates varying by increments of four annas from 8 annas to Rs. 2-8-0 per acre according to the soil, though no land was in practice charged either of the two highest rates; dry land was assessed at four rates ranging by increments of 8 annas from 8 annas an acre to Rs. 2, the soils being roughly classified under the four headings of (*a*) forest and coffee, etc., cultivation, (*b*) superior scrub, (*c*) inferior scrub and best grass and (*d*) inferior grass; on Government janmam land, whether wet or dry, a janmabhógam of 8 annas per acre was charged; existing coffee, etc., estates held under private janmis or in Government escheats were assessed at Rs. 2 per acre for all land cultivated in them and 6 pies per acre for uncultivated areas; but land held under the Waste Land Rules was not affected and estates held on Government patta were treated like ordinary land. The fundamental alteration in the existing system

was that a tax on occupation, as in other settled districts, was substituted for one on cultivation, or rather on the extent of cultivation returned by an inadequate and badly-paid subordinate revenue staff.

Its results.

The net results of the settlement, which was concluded early in 1887, were as under: On wet land, the extent assessed, the assessment, and the janmabhógam were raised by 168, 327 and 284 per cent. respectively; on estates by 784, 61 and 9,385 per cent. respectively; on dry holdings other than estates by 22, 187 and 2 per cent. respectively; and on all descriptions of land taken together by 403, 139 and 225 per cent. respectively.

These startling increases were explained to be chiefly due to the great extent of concealed cultivation which had been brought to light, to the manner in which the Government demand under the former settlement had been whittled down by the lower revenue subordinates, and to the results of the escheat enquiries, which had resulted in janmabhógam being levied on large extents which had previously escaped. It was pointed out that the average assessment on occupied wet land was so low as Re. 1-12-9 per acre. The enhanced wet rates were eventually introduced by degrees, the increase being added by increments at the rate of 25 per cent. annually.

Hardly had the settlement come into force when the High Court's well-known judgment declaring that Government should issue pattas in the name of the janmi, and not of the occupier, was promulgated; and many of the registers had to be re-written.

The Secretary of State was apprehensive of the result of the great increase in assessment which the settlement had brought about and directed that the effect of it should be carefully watched. A series of reports on this point thus came to be written in the years which followed. The District Officers were for the most part of opinion that, though the coffee and other estates had been treated leniently enough, the increased rates imposed on wet and dry cultivation by natives did not sufficiently allow for the facts that the labour supply was scarce; the country very unhealthy; and the ravages of wild animals, particularly pig, deer and elephants, most serious in certain parts. They pointed out that members of the Chetti landholding class were now to be seen working for daily wages on coffee estates, a thing unknown in former days. Government, however, after considering the whole question at length on several successive occasions, adhered to the view that the assessments on the whole were not too high and that the considerable relinquishments of wet land which had

CHAP. XI. THE EXISTING SETTLEMENT.

undoubtedly occurred were due to the Chettis abandoning worthless patches now that they had for the first time to pay for all land in their occupation, and not merely for the areas they actually cultivated.

Settlement of the Ouchterlony Valley.

The Ouchterlony Valley, the position and history of which are sketched on pp. 372–377 below, was first surveyed in 1872, was resurveyed in 1887, and was settled in 1889. The land tenure there is the same as in the Nilgiri Wynaad, the Nilambúr Tirumulpád being the janmi; and the new settlement followed the principles adopted in the latter area. There was no wet land in the Valley nor any dry fields of the ordinary kind, and the only areas under cultivation were coffee and other estates. These had formerly been charged Rs. 2 on every acre cultivated and nothing on uncultivated areas, and were now assessed at Rs. 2 per acre on the cultivated area and 6 pies on the uncultivated, as in the Wynaad. So popular at that time was this system, which allowed planters to extend their cultivation without extra charge during the thirty years for which the settlement was to be in force, that Mr. Wapshare, who represented the Ouchterlony Trust, the biggest holders in the Valley, threatened that unless it was followed there he would appeal to the Secretary of State.

The result of the survey and settlement was that the total area assessed increased (owing chiefly to the inclusion for the first time of uncultivated areas) by 212 per cent. and that the assessment itself was enhanced by 47 per cent. owing to over 2,000 acres of cultivated land having previously escaped taxation and to the uncultivated area, which had formerly paid nothing, being now charged 6 pies per acre.

EXISTING ADMINISTRATIVE ARRANGEMENTS.

The changes in revenue jurisdiction over the Nilgiris which have from time to time occurred have already been sketched in Chapter II above. It first became a separate charge in 1868, and a list of the Commissioners and Collectors who have presided over its destinies since that date is given in the Appendix to this chapter.

While the district was under a Commissioner it was not split up into divisions as usual elsewhere, but the jurisdiction of the Commissioner and his Assistant were conterminous. In 1882, when the country was first made a Collectorate of the ordinary type, the Head Assistant Collector (who was, and still is, the only Divisional Officer) was posted to Coonoor. In July of that year, however, the increasing importance of the gold-mining industry in the South-east Wynaad led Government to transfer his headquarters temporarily to Dévála and give him charge of the

Gúdalúr taluk. In 1883 he moved to the Balcarres bungalow, a mile or so east of Pandalúr, and rented for his office the substantial building at the latter place which had been originally erected as a mining-store and is still known as 'the cutcherry bungalow'; but later in the year his office was moved back into a rented building at Dévála. In 1885 this latter place, and in 1889 Pandalúr again, was made his nominal head-quarters; but as a matter of fact, the gold-mining industry being now dead, he spent most of his time in Gúdalúr, Naduvattam and Ootacamund. He was given in 1885 the powers of a District Munsif which had before been exercised by the deputy tahsildar of Gúdalúr.

In 1891 Government ordered his head-quarters to be transferred to Gúdalúr, but, on the Collector's earnest representation that that place was not fit for the permanent residence of a European, they said that though his office must be in Gúdalúr he himself might live at Naduvattam. Two years later this order was withdrawn and the Head Assistant, who for some time had been in Ootacamund on forest settlement work, was allowed to remain there permanently, going down periodically to Gúdalúr to dispose of any suits which his position as District Munsif required him to try.

In 1905 the growing importance of Coonoor was forcibly brought to the notice of Government and the Head Assistant was transferred to that place and given charge of the Coonoor taluk; the Collector took direct control of the other two taluks; and (in 1906) the deputy tahsildar of Gúdalúr again became a District Munsif. These arrangements still continue.

Coonoor taluk is in charge of a tahsildar and a stationary sub-magistrate; Gúdalúr of a deputy tahsildar and sheristadar-magistrate; and Ootacamund of a deputy tahsildar. The district has only one Deputy Collector, who is in charge of the treasury work at Ootacamund. No treasury, in the ordinary sense of the word, exists there; the Government money is kept at the Ootacamund branch of the Bank of Madras, where receipts and disbursements are made on the authority of the Deputy Collector.

Judicial administration is dealt with in Chapter XIII.

CHAP. XI.
APPENDIX.

APPENDIX.

Commissioners and Collectors of the Nilgiris.

Date of taking charge.	Name.
	Commissioners.
1st August 1868 ..	James Wilkinson Breeks. Wrote *The Primitive Tribes and Monuments of the Nilagiris.* Was Private Secretary to Sir William Denison, 1861–64. Died at Ootacamund on 6th June 1872 and is buried in St. Stephen's cemetery. The Breeks' Memorial School was founded in his memory.
20th June 1872	John Rennie Cockerell. Made the race-course on the Downs which is called after him 'Cockey's Course.'
21st October 1876 ..	William Horatio Comyn.
13th December 1876 ..	Alexander McCallum Webster.
18th March 1878 ..	Richard Wellesley Barlow. Grandson of Sir George Hilaro Barlow, G.C.B., who was Governor-General from 1805 to 1807 and Governor of Madras from then till 1812, and whose portrait by Watson hangs in the Banqueting Hall at Madras. He succeeded to the baronetcy in 1889, before he retired, and died in 1905.
21st May 1880 ..	Norton Aylmer Roupell.
27th November 1881 ..	Richard Wellesley Barlow.
	Collectors.
1st February 1882 ..	Richard Wellesley Barlow.
17th October 1882 ..	Arthur Johnston Breeks Atkinson.
22nd March 1883 ..	Francis Brandt. Puisne Judge of the Madras High Court from 1884 to 1887.
9th February 1884 ..	Leonard Robert Burrows.
9th April 1889 ..	Charles Falkiner MacCartie. Private Secretary to Lord Wenlock. Made a C.I.E. on 1st January 1896. Retired in 1896 and was killed in action during the Boer War at Dreifontein on 10th March 1900 when serving with Roberts' Horse. The MacCartie Ward at St. Bartholomew's Hospital was founded in his memory.

Commissioners and Collectors of the Nilgiris—cont.

Date of taking charge.		Name.
		Collectors—cont.
16th December 1891	..	John David Rees. Private Secretary to three successive Governors—Sir M. E. Grant Duff, Lord Connemara and Lord Wenlock. Government Translator in Tamil, Telugu, Persian and Hindustáni. Resident in Travancore and Cochin. Additional Member of Viceroy's Council, 1895–1900. Made a C.I.E. on 20th May 1890. Retired in 1900. Author of numerous books and articles in the magazines. Became Liberal M.P. for Montgomery District in 1906. 'Rees' Corner' on the Downs is so called because he broke his collar-bone there.
19th January 1893	..	Francis D'Arcy Osborne Wolfe-Murray. Retired on an invalid pension in 1903.
22nd December 1893	..	John David Rees.
15th April 1895	..	Henry Alexander Sim. Private Secretary to Sir Arthur Havelock, 1897–1901. Made a C.I.E. on 1st January 1901. Additional Member of the Viceroy's Council, 1905–06.
19th July 1895	..	John David Rees.
30th November 1895	..	Edward Creswell Rawson.
9th April 1896	..	John David Rees.
16th August 1896	..	James Henry Apperley Tremenheere.
17th November 1897	..	Harold Arthur Stuart. Private Secretary to Sir Arthur Havelock, 1896–97. Made a C.S.I. on 1st January 1904 and the first Director of Criminal Intelligence in April of the same year. Created K.C.V.O. on 19th March 1906.
21st February 1898	..	Donald William Garden Cowie.
27th May 1898	..	James Henry Apperley Tremenheere.
12th June 1898	..	Donald William Garden Cowie.
27th July 1898	..	Alan Butterworth.
1st February 1899	..	Charles James Weir.
18th June 1899	..	Sydney Gorden Roberts. Head Assistant Collector in charge.
2nd August 1899	..	Charles James Weir.
31st December 1900	..	Charles Mylne Mullaly.
1st May 1901	..	Charles James Weir.
4th May 1901	..	Charles Mylne Mullaly.
10th May 1905	..	Alexander Lidderdale Hannay.
8th July 1905	..	Charles Mylne Mullaly.
8th November 1905	..	Llewellyn Eddison Buckley.

CHAPTER XII.

SALT, ABKÁRI AND MISCELLANEOUS REVENUE.

SALT—Saltpetre. ABKÁRI AND OPIUM—Toddy—Arrack—Foreign liquor—Beer—Opium and hemp-drugs. INCOME-TAX. STAMPS.

CHAP. XII. SALT.

THE district produces no salt, and that which is consumed in it is imported. It contains no salt-earth either; and the illicit manufacture of earth-salt, which in so many other areas has occasioned the authorities such trouble, has never caused any difficulties. The Salt Commission of 1876 reported that in those days the salt dealers at Ootacamund obtained black salt from Ponnáni in Malabar district, and white salt from Madras, but at present the salt consumed in the district is the lighter variety manufactured in the pans in the Bombay Presidency, which is brought to Calicut by sea and thence by rail to Méttupálaiyam or Coonoor and on by cart. Salt is sold wholesale at the pans by weight, but retailed in the bazaars by measure; and the dealers therefore prefer the light Bombay salt to the heavier kinds made in the Madras pans, as it gives them a greater profit. The unusual cost of transport naturally makes salt rather dearer on the hills than in the plains, and in 1905–06 the price averaged Rs. 3-6-10 per maund.

Saltpetre.

No saltpetre is made in the district; but considerable quantities, both crude and refined, are imported for manuring coffee estates (tea is less systematically manured) from the Coimbatore and Trichinopoly districts, where it is manufactured in rather a primitive way by the natives from the nitrous soils which are so common there. The imports of saltpetre from Calcutta which appear in the trade statistics consist of the twice-refined product which is used in the Cordite factory at Aravankád.

ABKÁRI AND OPIUM.

The abkári revenue consists of that derived from country spirit (arrack), foreign liquor, beer, and hemp-drugs. Statistics regarding certain of these items, and also concerning opium, will be found in the separate Appendix.

Toddy.

Toddy-yielding palms do not grow on the plateau, and that beverage is neither made there nor imported, but beer takes its place. In the Wynaad, sago palms (*Caryota urens*) are scattered sporadically, often in inaccessible places, but only a small number

of them are tapped and they are not taxed. Those growing in private gardens are most often utilized, but their owners seldom think of charging their neighbours anything if they happen to give them a drink and the arrack revenue is not affected. In 1876 orders were issued prohibiting the drawing of toddy in this way without a license, but the Kurumbas and other jungle-tribes begged that these instructions might be rescinded, declaring that their gods were very displeased at no longer receiving offerings of strong drink at the periodical festivals, and were in consequence bringing down upon them all manner of misfortunes. The orders were withdrawn in the same year; and at present the operation of all the provisions of the Madras Abkári Act which relate to toddy has been suspended within the district.

Arrack

Arrack, or country spirit, is supplied at present under what is termed the contract distillery supply system, which was introduced in 1901–02. Under this the exclusive privilege of manufacture and supply of country spirits throughout the district is disposed of by tender, the successful tenderers paying an excise duty on spirit issued from their distillery and selling it wholesale at rates fixed by Government, while the right of retail sale at the sanctioned shops is disposed of annually, shop by shop, by auction.

The tenderer at present is Rao Bahádur Tiruvénkatasvámi Mudaliyár, whose distillery is at Coimbatore. He distils arrack from palmyra jaggery there and supplies a 'warehouse' at Coonoor, and wholesale dépôts have been established elsewhere in the district. Messrs. Rangayya Gavundan & Co. own a distillery on the plateau itself, at Aravankád near Coonoor, but, as they found themselves unable to work the contract for the supply of the district jointly with the Coimbatore firm, their distillery was closed in 1904.

Drunkenness among the natives is more than usually noticeable in Ootacamund, especially upon 'shandy day,' or Tuesday, when the big weekly market takes place. Shandy day is a kind of general holiday in the town, and domestic servants belonging to the plains, who are ever under the temptation to fortify themselves with strong waters against the unaccustomed cold and wet of the hill climate, take advantage of the fact; the cartmen who have travelled up with merchandise from the low country, tired and ill-clad as they are, fall with even greater readiness; while the Badagas and other inhabitants of the hills who have brought in vegetables and other produce to the market are unusually flush of cash then, and indulge in a luxury which is unattainable in their distant villages or on the other six days of the week. The

CHAP. XII. ABKÁRI AND OPIUM.

liquor shops lie along main thoroughfares used by Europeans, and drunkenness is thus brought to their notice more than it would be in the ordinary town, into the back bazaars of which they would seldom penetrate. The matter has therefore frequently attracted notice. In 1856 the Nilgiri abkári contract was for the first time sold separately from that of the rest of Coimbatore district, the term being for five years and the price Rs. 24,500 per annum for 29 shops. In 1860, drunkenness among the domestic servants of Europeans at Ootacamund was so noticeable that the residents held a public meeting, influentially attended, which adopted sundry resolutions asking Government to legislate about the matter. The Ootacamund servants, it may be noted, have always, with exceptions, been the offscourings of their class—no man caring to work in Ootacamund, away from his relations and his beloved bazaar, who can get a good post on the more congenial plains—and the then Commandant of the Nilgiris stated that half of them were either liberated or escaped convicts. The public meeting roundly declared that their 'insolence, fraud and drunkenness' were 'mainly due to the working of the Abkári department' and had 'caused a state of matters at Ootacamund that was absolutely intolerable.' The Board of Revenue consulted the 'Improvement Committee' and other residents of the town and in the end the number of arrack shops in the place (twelve) was reduced, the smaller beer shops were put down, and a person who, under cover of a license to sell 'good wholesome beer,' was retailing a highly spirituous liquor which he styled 'Ginger wine' was suppressed.

In 1892, upon the question again attracting attention, three more liquor shops near the market were closed; while to stop the favourite practice of mixing beer with spirits, which makes a very heady beverage, country-brewed beer was no longer allowed to be sold in foreign liquor taverns.

The only part of the district into which smuggling of liquor from the low country ever appears to be attempted is the Ouchterlony Valley. The three liquor shops there were closed in 1893–94 at the request of the planters and, since licit liquor is cheaper in the Ernad taluk of Malabar (which adjoins the Valley on the south) than in the Nilgiris and illicit distillation is not difficult on account of the wild nature of the country, risk of the smuggling of spirit exists.

Foreign liquor.

The supply of foreign liquor is controlled on much the usual system, licenses to vend wholesale or retail being issued on payment of the prescribed fees or, in the case of taverns, sold by auction.

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Beer.

One of the first things which struck the early visitors to the Nilgiri plateau was the possibility of making there the beer which in those days was regarded almost as a necessary of life and was imported all the way from England in bottle. They saw that barley was already cultivated in large quantities and that the climate was cool enough for brewing. As early, therefore, as 1826 'extremely good beer' was brewed on the Nilgiris from barley malt of native manufacture and English hops,[1] and in 1827 the Ootacamund 'Station Committee' urged Government to establish a brewery to supply malt liquor to the European troops. They said that the hill barley, in their opinion, would malt excellently and that hops would grow if once plants were introduced. Private efforts to grow them had failed, and the Committee begged Government to bring out some seedlings in the next year's ships. Hops, it may here be noted, have never yet been successfully cultivated on the hills, and have to be imported; and the better kinds of barley tried there (see p. 167) have been found always to deteriorate rapidly, either owing to defects in soil, climate or cultivation, or to hybridization with inferior local varieties.

Surgeon De Burgh Birch's report of 1838 on the hills[2] again urged that at least a trial of brewing should be made, and by 1839[3] an experimental brewery had been started on the plateau (by a Mr. Davis at Kalhatti), notwithstanding the severe handicap which the then cost of carriage imposed. What became of it is not clear. In 1847, in his survey report,[4] Major Ouchterlony once more proposed the establishment of a Government brewery to supply the troops. He said he had himself brewed several casks of beer, without a single failure, from malt made from the local barley and hops and dried yeast imported from England. No Government brewery was ever established, and the real pioneer in the industry was Mr. Samuel Honeywell, who (as early as 1857) started at Aravankád what is now the Castle Brewery.

His beer was a potent compound, containing nearly as much alcohol as inferior arrack, and in 1872, partly to protect the more highly taxed arrack and toddy, Government ruled that it must not in future contain more than 8 per cent. of alcohol and imposed on it an excise duty of one anna per gallon, which was

[1] Hough's *Letters on the Neilgherries*, 135.

[2] M.J.L.S., viii, 96.

[3] *Asiatic Journal*, xxx, 295.

[4] M.J.L.S., xv, 20.

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the then customs tariff on imported beer and which is the rate still in force. Mr. Honeywell wanted to open a brewery in Madras as well, but the Board of Revenue did not believe it possible to make good malt on the plains, and was not inclined to encourage the production, under the name of beer, of intoxicating liquors not made from malt.

In 1872 Captain Albert Frend started the Llangollen Brewery near Marlimand. Three years later, analyses and other information showed that barley malt and hops formed a very small item in the composition of the hill beers and a series of restrictions and rules designed to improve their quality were introduced. In 1879 the existing 'Nilgiri Brewery' was started in Ootacamund itself, just south of the race-course, by the Murree Brewery Co. Its buildings, plant and machinery were all expensive, and, perhaps for this reason, it had a chequered career. It passed to Messrs. Leishman & Co. and now belongs to the same Rangayya Gavundan who owns the Castle Brewery and the distillery at Aravankád. It makes 'native' beer for the supply of the local taverns, which, as has been said, take the place of the toddy-shops of the plains. In 1883 the Llangollen Brewery was suppressed by the Board, its beer having been found to be very bad. In 1895 the Rose & Crown Brewery, at Yellanhalli, near the Half Way House on the Ootacamund-Coonoor road, was opened by Muni Huchanna. He sold it in 1900 to Mr. C. Akilánda Aiyar; it was afterwards attached by the civil courts; and it is now the property of a limited company and holds the contracts for the supply of the troops at Wellington, Trichinopoly and elsewhere. For beer supplied to the taverns, the barley of the district is used, but for the higher grades ('English beer') grain is imported all the way from Rewári in the Panjab, whence the Mussooree and Naini Tál breweries are also supplied. The British Brewery, a very small concern, was opened in Ootacamund in 1902 and survived for only four years.

Opium and hemp-drugs.

Formerly the opium poppy was commonly grown on the plateau by the Badagas. Sir F. Price says that for some years opium formed part of the tribute paid in kind by the hill people to Government; and that some of it was sent to China, but was pronounced of inferior quality. The opium was made by scratching the green poppy-heads and collecting, after a day or two, the juice which had exuded, which had by then become gummy. This was generally done in the cold season, when the juice was supposed to be thickest. The poppy-head itself was finally cleaned of its seeds, dried, and sold to the Kótas, who pounded

it well and made a decoction from it. The Badagas used always to eat the opium and never smoked it. Metz frequently mentions the commonness of its use by suicides—especially by Badaga women the course of whose love-affairs did not run smoothly.

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This cultivation has now, of course, been stopped; and the poppy plant is never seen outside European gardens; the drug is obtained from the Madras storehouse; and its sale is governed by the usual rules and regulations. The ganja consumed is almost all received from the Kaniyambádi storehouse in North Arcot, where the crop grown on the Javádi hills is kept.

INCOME-TAX.

Income-tax is levied and collected in the usual manner. Statistics of the receipts in recent years will be found in the separate Appendix. The circumstances of the Nilgiris are altogether exceptional, nearly a fourth of its people (a higher percentage than in any other district) living in its towns and a large proportion of these being well-to-do traders. Consequently, though the total amount of tax collected is almost the smallest of any district in the Presidency, the incidence per head of the population is over six times the Presidency average and that per head of the tax-payers is more than half as much again as that average.

STAMPS.

For similar reasons the stamp revenue is also exceptional in its nature, for, while the actual amount received is smaller than in any other district, the revenue from both judicial and non-judicial stamps is higher per unit of the population than in any other. Statistics of the receipts in recent years appear in the separate Appendix.

CHAPTER XIII.

ADMINISTRATION OF JUSTICE.

CIVIL JUSTICE—The existing civil courts—Registration. CRIMINAL JUSTICE—The present tribunals—Crime—Coffee-stealing. POLICE—Former systems—The existing force. JAILS—The District Jail—The European prison—Sub-jails.

CHAP. XIII. CIVIL JUSTICE.

THE history of the administration of civil and criminal justice in the district has been sufficiently sketched in Chapter II above.

The existing civil courts.

The existing civil courts are those of the District Judge of Coimbatore, who has the usual ordinary and appellate jurisdiction throughout the district; the Sub-Judge at Ootacamund, who has jurisdiction over the Coonoor and Ootacamund taluks and in cases above Rs. 2,500 in value arising in Gúdalúr, and also exercises small cause powers; the District Munsif (who is the deputy tahsildar) of Gúdalúr, who tries suits valued at Rs. 2,500 and under arising in that taluk and appeals from whom go to the Sub-Judge; and the village munsifs (headmen), who rarely try cases above Rs. 20 in value. Village bench courts constituted under Act I of 1889 also sit at Ootacamund and Coonoor and have jurisdiction over certain specified villages in the neighbourhood of those towns.

Registration.

The Nilgiris was first created a registration district in 1869, a District Registrar being then appointed. A proposal to re-amalgamate it with Coimbatore was negatived by Government in 1887. Besides the District Registrar at Ootacamund, there are now sub-registrars at Coonoor and Gúdalúr, the latter being the taluk sheristadar.

CRIMINAL JUSTICE. The present tribunals.

The criminal courts having jurisdiction in the district are those of the Sessions Judge of Coimbatore, who exercises the usual powers; the District Magistrate, who is also Additional Sessions Judge; the Head Assistant at Coonoor, the Treasury Deputy Collector at Ootacamund and the Sub-Judge, who are all first-class magistrates; the tahsildar of Coonoor, the deputy tahsildars of Ootacamund and Gúdalúr, the stationary sub-magistrate at Coonoor and the taluk sheristadar of Gúdalúr, who have second or third class powers; the bench of magistrates at Ootacamund established in 1898 [former bench courts at Coonoor (1875–76), Kótagiri (1878–94) and Gúdalúr (1878–89) have all

been abolished]; the cantonment magistrate at Wellington, whose office has more than once been abolished and re-established; the Superintendent and Assistant Superintendent of the Aravankád Cordite factory, who, as the factory is not included in the Wellington cantonment, have powers to try offences under the Towns Nuisances Act; and the village magistrates, less than half a dozen of whom generally use their powers in any year.

There is nothing unusual about these courts unless it be that the appeals to the District Magistrate from the orders of the subordinate tribunals are proportionately more numerous than in any other district in the Presidency.

Crime.

Outside the two municipal towns, crime is light; but within them the number of offences committed is sufficient to bring the Nilgiris among the districts in which the proportion of offences to population is highest. Grave crime, such as dacoity or robbery, is however very rare in any part of the district. The murders of Kurumbas due to their supposed powers of black magic which have occurred from time to time have been referred to on p. 155. In the Wynaad the Paniyans and Kurumbas commit most of the small amount of crime which is perpetrated there. A Wynaad house is usually walled with bamboo wattle and daub, and roofed with thatch, and house-breaking is consequently a temptingly simple matter.

Coffee-stealing.

An offence which has attracted more attention in the district than any other is coffee-stealing. In 1877 the Wynaad planters brought its prevalence to the notice of Government, declaring that it had become the regular occupation of a section of the population; that wholesale stripping of the trees went on at night; that almost every wayside bazaar and arrack-shop keeper was a receiver of the stolen berries, growing a few trees as a blind; and that pulped coffee on the way down to the curing-works on the coast was stolen in great quantities, the loss in weight being made up, to prevent detection, by watering the bags or by inserting rubbishing coffee in the place of that abstracted. They prayed that a special law, similar to the Ceylon Ordinance of 1874, might be introduced to protect them, seeing that coffee was so portable, so valuable and so difficult to identify.

In the next year an Act (VIII of 1878) was accordingly passed to check this form of crime. Briefly stated, its provisions made it unlawful to purchase any coffee from any labourer on a coffee-estate, or to buy from others employed on such properties or from carriers of coffee unless the transaction was duly recorded in a prescribed register open to inspection by the police and

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magistracy; rendered labourers and maistries found in possession of freshly-gathered coffee liable to punishment unless they could satisfactorily explain how they obtained it; required all transport of coffee to be covered by the written permission of the owner or his agent; and made the gathering, moving, loading or unloading of coffee on any estate between sunset and sunrise an offence.

The Act was not a success and the stealing went merrily on. At the beginning of the picking season Máppillas used to come up from Malabar and squat in temporary huts for no other purpose than to receive the stolen crop; and the native owners of small coffee-gardens also entered the lucrative business, adding to their own crop the coffee filched from their European neighbours. Sometimes a half-cultivated patch of coffee was found to be exporting crop six times as heavy per acre as that which carefully-tended estates could produce. In 1894 efforts were made in the Malabar Wynaad to checkmate this latter class of receivers by counting all the trees in all the gardens, entering the results in a register, noting the amounts gathered in each garden at the crop season, and seeing that small plots no longer pretended to have produced tons whereas in reality they only grew bushels. The markets were also watched to stop the bartering of stolen coffee for other commodities, and the roads were patrolled to prevent its clandestine removal and the thefts during transit from the estates to the coast agents. These steps effected much good; but it was evident that the Act of 1878 needed amendment and this was eventually effected by Act II of 1900, which added to it fresh provisions requiring persons in charge of coffee-estates who sold, exchanged or delivered coffee, to keep registers detailing the transactions; obliging all such persons to keep accounts of their crop; making the unexplained possession of parchment or cherry-dried coffee, as well as of freshly-gathered berry, punishable; and providing for the issue of detailed rules to carry out the purposes of the Act.

POLICE. Former systems.

Until the advent of the British there appear to have been no police in the district. In most other districts crime was kept in check by the well-known *kával* system, under which *kávalgárs* (watchmen) were appointed to each village or group of villages; were controlled by *ménkávalgárs* (head watchmen), often the petty local chieftains, who held control over perhaps half a taluk; and were required either to detect thefts and robberies or to make good from their own pockets any property lost. These village and head watchmen were alike remunerated by grants of land and annual fees in kind from the villagers; and when the British

occupied the country the latter were dispensed with and their grants and fees resumed, while the former were allowed to retain their posts and emoluments under the name of *talaiyáris* and were eventually formed into the existing village police.

This system seems never to have prevailed in the Nilgiris—where, indeed, until the recent settlement there were no regular village establishments at all—and to this day the district possesses no real village police, the duties of the *tándalgárs* who were appointed at the settlement being rather to collect the revenue than to suppress crime.

The village monigars (*maniyakárans*) and sub-monigars who were in office before the settlement, and the number of whose posts was largely increased at the revision of village establishments then made, were worse than useless in checking lawlessness. Mr. Grigg writes 'the vaguest notion of their duties as village magistrate or police officer prevails among the headmen. So far from their understanding that it is their duty to repress such crime, they seem to regard it almost as a sacred duty not only to countenance and shield the wrong-doers, but even to aid in the perpetration.' In the villages, for which alone they were responsible, crime, however, has always been light.

In the towns, on the other hand, the miscellaneous immigrant population, formed as it has always been of all sorts and conditions of castes, races and tongues, has ever needed a strong hand over it, and as early as 1828 a small body of military police seems to have been established in Ootacamund under the orders of the military Commandant then appointed to the charge of the place.

In 1847 [1] these men were under the immediate orders of the tahsildar subject to the general control of the military Joint Magistrate, and consisted of a kotwál on Rs. 42 per mensem, five daffadárs and 75 peons; but three of the daffadárs and 43 of the peons were called sibbandis, acted as a kind of rural police and were employed for part of the year in collecting the revenue, and six more of the peons were exclusively engaged in protecting the forests round Ootacamund from the depredations of wood-cutters. The kotwál had a 'choultry' to which was attached a lock-up.[2]

In 1859, as has already (p. 121) been seen, the post of Commandant was abolished, and the military police were eventually placed under the orders of the civil authorities in accordance

[1] See Ouchterlony's survey report, 69. [2] *Pharoah's Gazetteer*, 488.

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with the Police Act XXIV of that year. The Superintendent of Police in Coimbatore had general charge of the new force, and the immediate control of it was in the hands first of an Assistant Superintendent stationed at Ootacamund, later of a Chief Inspector, and finally of an Assistant Superintendent again.

The existing force.

In accordance with the recommendation of the Police Commission, the Secretary of State in 1906 ordered that the district should have a Superintendent of its own; and the change was introduced at the end of that year. The police force now consists of 190 men distributed among the fourteen stations shown in the margin and supervised by three inspectors.

Ootacamund.	Paikára.
Kándal.	Naduvattam.
Coonoor.	Masinigudi.
Wellington.	Gúdalúr.
Kótagiri.	Dévála.
Lovedale.	Nellakóttai.
Kalhatti.	Chérambádi.

JAILS. The District Jail.

In the early days the only jail in the district seems to have been the kotwál's lock-up already mentioned. Roads and other public works, however, were largely carried out by the labour of convicts brought up from the plains, and these people were confined at night in sheds attached to the old Convalescent Dépôt which (see p. 120) had been transferred to Southdowns in 1832 and abolished in 1834 and the buildings of which had long remained unoccupied. This consequently was commonly called 'the jail.'[1] It was subsequently utilized as a court-house for the Principal Sadr Amin appointed in 1855, and in 1856 was converted into a district jail under the charge, at first, of that officer and, later, of the military Joint Magistrate. It contained accommodation for 72 male and ten female convicts, three under-trial prisoners and six civil debtors, and included a hospital capable of holding 26. Attached to it was also a temporary shed with a corrugated iron roof which was divided into three wards capable of holding 88 men in all and was used for short-term prisoners. For years the convicts were chiefly employed on roads and other public works in the station and when their numbers were insufficient to keep the working gang up to a strength of 100, men were drafted to this prison from the jails on the plains to make up the deficiency. In August 1887 the jail was abolished and its inmates transferred to Coimbatore. The buildings are now utilized for the offices of the Inspector-General of Prisons, the deputy tahsildar and the forest ranger, as a sub-jail and as residences for Government clerks.

[1] Ouchterlony's survey report, 83; *Pharoah's Gazetteer*, 488.

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The European prison.

The old European prison adjoining this jail was opened in 1862 for the accommodation of Europeans sentenced in all parts of India to long terms, whether by the ordinary tribunals or by courts-martial. It would hold 36 persons. When accommodation suitable for Europeans began in course of time to be erected in other provinces, the number of convicts sent from thence to Ootacamund fell off, and the jail was used for short-term prisoners and Eurasians. The convicts in it were never employed outside the walls, but were kept at work on weaving, making coir matting, shoe-making and so on, and in keeping their premises and clothing in repair.

In 1883 Sir Frederick (now Earl) Roberts, then Commander-in-Chief, stopped the sending of persons convicted by courts-martial to the jail, considering it desirable that they should undergo their sentences in military prisons; and in 1886 the inmates numbered only six. Government considered it wasteful to maintain an expensive staff to look after so few people, and in 1887 reduced the establishment to a strength sufficient to control 18 prisoners, abolished the post of Superintendent, placing the institution under the Medical Officer, and turned the lower storey of the building into a sub-jail.

In 1890 the Committee appointed by the Governor-General to enquire into jail administration visited the prison. They found that it contained only seven Europeans, of whom four had been brought all the way from the Punjab, and that the establishment then maintained cost no less than Rs. 583 per prisoner per annum. They declared that the jails in the plains of the different provinces contained quarters in which European prisoners could be 'as comfortable as the majority of European subalterns living in the same localities and far more comfortable than the large proportion of poor whites and Eurasians can afford' and therefore recommended the abolition of the institution. Their suggestion was carried into effect from 31st March 1891 and the buildings are now used as the offices of the Director of Cinchona Plantations, the Government Epigraphist and the District Registrar, and as residences for clerks. In 1906 the old exercise-yard of the prison was converted into the Armoury and Drill Hall of the Nilgiri Volunteer Rifles. This is now practically the only hall available for public entertainments in Ootacamund; and where the prisoners once took their dreary enforced walks, dances, dramatic performances and fancy fêtes are now held.

Sub-jails.

The only prisons in the district at present are the three sub-jails at Ootacamund, Coonoor and Gúdalúr.

CHAPTER XIV.

LOCAL SELF-GOVERNMENT.

THE DISTRICT BOARD—Its finances. WELLINGTON CANTONMENT. COONOOR MUNICIPALITY—Drainage—Water-supply. OOTACAMUND MUNICIPALITY—Its early efforts—The market—Drainage—Water-supply—The Marlimand supply—The Dodabetta reservoir—The Kodapamand reservoir—The Tiger Hill reservoir—Checking of overcrowding.

CHAP. XIV. THE DISTRICT BOARD.

OUTSIDE the limits of the Wellington cantonment and the two municipalities of Ootacamund and Coonoor referred to below, local affairs in the Nilgiris are administered by the District Board. None of the taluk boards or union pancháyats common in other districts exist, the rural population being too backward; and consequently the District Board consists entirely of members appointed by Government and includes none of the nominees of taluk boards who sit on similar bodies elsewhere.

Its finances.

Though the incidence of local fund taxation in the Nilgiris per head of the population is nearly three times as high as in the Presidency as a whole, the District Board has always been in a chronic condition of impecuniosity. Though the land-cess, the mainstay of the finances of the corresponding bodies in the plains, is levied on the plateau and in the Ouchterlony Valley at two annas in every rupee of the land assessment, or double the rates usual elsewhere in the Presidency, yet it only brings in about Rs. 14,000 annually; tolls are collected at the maximum permissible rates at as many as fifteen gates and yearly contribute about Rs. 34,000 to the Board's coffers, but this does not cover even one half of the annual expenditure on roads; and all the other sources of income put together bring in less than Rs. 10,000 a year. On the other side of the account, the great length of ghát and other roads which the Board has to keep in order eats up as much as Rs. 1,20,000 a year; for their alignment along steep slopes, the heavy rainfall and the large traffic which some of them carry make their maintenance a most expensive business Consequently the Government, in addition to keeping up the ghát road from Kallár to Ootacamund (to help pay for which, however, they take one-third of the tolls collected thereon) have annually to contribute about a lakh of rupees to keep the Board from insolvency.

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Particulars of the roads, hospitals and dispensaries, and schools kept up by the Board have been given in Chapters VII, IX and X respectively.

WELLINGTON CANTONMENT.

Wellington cantonment, which does not include the Cordite factory, is administered by a military cantonment committee. The sanitary provisions of the Cantonment Code have also been extended to an adjoining area which reaches as far as the Half Way House on the road to Ootacamund. Within the cantonment proper, taxes on professions, vehicles and animals, a tax at 7½ per cent. on the annual value of buildings and a water tax at 4¼ per cent. of the annual value of buildings and lands are collected under the combined operation of the Cantonments and District Municipalities Acts.

COONOOR MUNICIPALITY.

Coonoor town, the main features of which are mentioned on pp. 317–324 below, was constituted a municipality on 1st November 1866 under the then municipal enactment, the Towns Improvement Act of 1865. The proposal had not met with approval locally. One objector said 'the native population does not exceed 1,400 inhabitants, amongst whom I do not suppose that six men of substance exist. There are 39 houses for Europeans; but, as many of them are occupied by strangers, the provisions of the Act, if introduced, would fall heavily on their owners.' It had been suggested that Wellington and Coonoor might together be formed into one municipality; but the opposition combated this idea also, arguing that the heavy cost of the police in Wellington cantonment (in those days municipalities had to contribute to the upkeep of the police within their limits) would hamper the council and that 'it would hardly be fair to tex the Coonoor people for police who are kept chiefly to look after camp followers and riotous soldiers.' Government, however, waved aside all objections and made the place a municipality on the ground that it was already 'an important hill sanitarium.' The first council was composed entirely of Europeans, there being no natives sufficiently qualified.

The present council includes two natives among its twelve members. In 1871 it was given the power of electing its own vice-president, and this privilege was continued in the case of the chairman appointed under the existing Municipal Act of 1884. The incidence of the taxation in the town per head of the population is Rs. 3–2–2, which, though nearly treble the average for the Madras municipalities as a whole, is lower than in either Ootacamund or Kodaikanal, the other two 'hill municipalities' of the Presidency. A bill designed to provide further sources of

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taxation in these three areas (and also to secure the better regulation of building and improved supervision over articles of food and drink) has very recently been passed into law.

The chief permanent improvements effected by the Coonoor council during the forty years of its existence have been the extension of the market, which now brings in an annual revenue of Rs. 20,000 (more than that produced by any municipal market except those at Trichinopoly and Ootacamund), and the execution of schemes of drainage and water-supply.

Drainage.

After years of discussion—the Government constantly pressing the municipality to act and the council as persistently pleading its impecuniosity—the first plans and estimates for a drainage scheme were prepared in 1885 by the municipal overseer. They divided the town into the two separate areas of Bazaar Hill and Mission Hill, which were treated separately, and provided for open drains discharging into two covered sewers, one for each of the two hills, which both led into an iron pipe discharging into the Coonoor river just below the masonry bridge over it at the edge of the ghát near the present railway-station. The estimates were slightly revised (and increased) by the Sanitary Engineer and were sanctioned in 1891. They then amounted to Rs. 42,500, of which Government made the council a present of Rs. 30,000 and lent the remainder at $4\frac{1}{4}$ per cent. on condition that it was repaid in twenty years.

The work was begun in August 1891 and finished by the end of the next year. The street drains are semi-oval and either of concrete laid in cement or of stoneware obtained from Messrs. Burn & Co. of Calcutta. The intercepting and outlet sewers are stoneware pipes made by the same firm and the outfall down the Coonoor river is a 12-inch iron pipe, bolted to the rock in the bed of the stream and discharging at a point where water is always flowing. The actual cost of the scheme was Rs. 42,589.

Water-supply.

The first municipal effort to better the water-supply of any part of Coonoor was the expenditure, in 1871, of Rs. 2,150 to improve a channel which ran from a spring near the Milk Village on the old road to Ooty on the western limit of the municipality (see the map at p. 318) to Woodcote and the three neighbouring houses called Balaclava, Alma and Inkerman. The channel had originally been cut 'without permission sought or granted' by Mr. Lascelles to supply Woodcote, which he had built in 1847, and the work done in 1871 consisted in improving its alignment and extending its benefits.

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The houses on the other side of the valley were at this time supplied by open channels which were polluted during their course in every possible way; and correspondence as to the best method of improving matters and raising the necessary funds went on for years without tangible result.

At length in 1888, on the Surgeon-General reporting in forcible language on the state of affairs, investigations were set on foot; and they were completed by the Sanitary Engineer in 1891. This officer's scheme consisted in leading an existing channel—which ran from the village of Yeddapalli (near the Kótagiri road) past Woodhouselee and Sim's Park and already supplied most of the place—to settling tanks and a service reservoir on the hill between the Park and the race-course, and distributing it thence throughout the town by pipes. The estimate was Rs. 80,000.

The channel in question, however, runs through cinchona and tea estates; and to preserve it from pollution at such points it was found that expensive additional works would be necessary which would bring the cost to Rs. 1,09,800. In 1899, therefore, estimates were prepared for an alternative scheme which utilized the purer and larger stream one of the two branches of which fed the Wellington cantonment. They amounted to Rs. 1,13,800, and provided for a low dam across the stream, a three-inch pipe thence to a covered service reservoir holding two days' supply and commanding the town, and much the same distribution arrangements as before. The Government offered to lend the council the money required at $4\frac{1}{4}$ per cent. repayable in twenty years, but that body declared its inability to find funds to pay the interest, and proposed instead to improve the Yeddapalli supply piecemeal. The sanitary advisers to Government would not hear of this latter suggestion, but made certain alterations in the Wellington stream scheme which reduced its cost to Rs. 99,200.

Government then sanctioned this scheme, granted Rs. 50,000 of the amount required to carry it out, and directed the council to raise the balance by a loan in the open market and to enhance its water and drainage tax by $2\frac{1}{2}$ per cent. to provide funds for the interest thereon.

The project was begun by the Public Works department; but it was speedily discovered that the discharge of the stream which was the source of the supply had been greatly overestimated and in reality was barely enough for half of the town. It was accordingly suggested that the branch from which Wellington was supplied, which was more than sufficient for the needs of the cantonment, should be also drawn upon and that a joint

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scheme should be prepared for both places. This involved correspondence with the military authorities. After much discussion the joint scheme was abandoned, but the sanction of the Government of India was accorded to the utilization by the Coonoor council of part of the branch which supplied Wellington.

In 1903 a slightly revised scheme was prepared accordingly. The reservoir was placed on Gray's Hill at Coonoor, and this and other alterations brought the total cost to Rs. 1,16,740. Unforeseen contingencies eventually raised the figure to Rs. 1,28,200; and in addition further extensions of the pipe lines proposed by the Collector and the chairman cost another Rs. 32,000 and the supply of the Milk and Chucklers' Villages Rs. 14,000 more. These items and the cost of reserving the catchment area made the total excess as much as Rs. 60,800, which was lent to the council by Government.

The head-works of this scheme were completed early in 1905 and were opened by Lord Ampthill in April. A year later the distribution system was also finished and the project is now in operation.

OOTACAMUND MUNICIPALITY.

Ootacamund, the general appearance and situation of which are referred to on pp. 357–363 below, was first constituted a municipality, under the Act X of 1865 above mentioned, in November 1866. Up to that time the few efforts which had been made to keep it in a sanitary state had been of the most desultory and inadequate description. Sir Frederick Price, whose book gives an account of the matter, shows that Colonel Crewe, when Commandant of the Nilgiris (1831–36), levied a small 'voluntary' tax from the bazaarmen for the upkeep of half a dozen sweepers to attend to the streets of the main bazaar; that this arrangement (though the number of the sweepers was at some periods rather larger) continued to be the only sanitary measure taken until the municipality was constituted; that such latrines as existed were built on the margin of the lake or over its supply channel; that as early as 1860 the lake was declared by the Director-General of the Medical department to be the 'universal cesspool' of the place; that the Sanitary Commissioner described it in the following year as 'an unbearable mass of uncleanness, polluting the atmosphere'; and that in 1866 the conservancy of the town was condemned as being 'as bad as could be'.

Its early efforts.

The council constituted in that year consisted of thirteen 'municipal commissioners' with the Collector of Coimbatore as president and the Special Assistant Collector as honorary secretary. It took over the existing conservancy plant; but this

consisted, say the records, merely of a few old wheelbarrows and of two bullocks one of which was unfit for work.

The net income available for roads and conservancy was at first Rs. 18,500, but the council does not appear to have acted with the energy proverbially expected of new brooms, for the Medical Officer's report on the state of the conservancy and roads in 1867 was perhaps the most strongly-worded of the many indignant protests on these matters which had been penned. It is worthy of note that even in those days the Australian wattle had become a serious nuisance and that the sanitary experts had complained of it as far back as 1859.

In 1868 enteric fever, up to then unknown in Ootacamund, was declared to be endemic in the station; public confidence in the health of the place was shaken and public opinion regarding the need of action aroused; and the rates of the taxes were enhanced so as to bring up the net income to about Rs. 22,000. Government offered the council a grant of Rs. 20,000 and a loan of another Rs. 40,000 to enable them to put their house in order and carry out sundry improvement schemes which had been outlined, but the Commissioners declared with emphasis that house property in the town was unable to bear the extra 2½ per cent. taxation which the repayment of the loan would have required. Eventually Government lent them Rs. 20,000 (of which half was afterwards treated as a free grant) and this was mainly expended on improvements in the main bazaar and in the erection of latrines—somewhat to the disgust of the European tax-payers, who complained that they had derived no sort of benefit from it.

The council suggested at this time that the whole of the main bazaar should be moved to Kándal; and though the amount of compensation involved was estimated, even then, at between £25,000 and £30,000, many thousands of rupees would have been saved if this scheme had been carried out. Chronic want of funds, however, prevented any heroic measures; and the council declined to tax themselves further, claiming that Government should help them as it had assisted the District Board and declaring that though they were quite ready to pay for their own conservancy they did 'feel it hard that they should be required to keep up extensive roads chiefly for the comfort and delectation of casual visitors.' The local paper used to refer to the municipal commissioners as 'the municipal omissioners' and Lord Napier was so little pleased with their attitude that he suggested the introduction of a bill to abolish them and vest their powers in the Commissioner of the Nilgiris.

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In 1869-70, however, some improvements were effected (notably the beginnings of the reclamation of the swamp at the upper end of the lake) and the language of the medical officers' reports grew milder. The market was extended; a beef slaughter-house was erected; and the main bazaar and its roads were sloped to prevent storm-water from stagnating on them. In 1871 this last area was further provided with some drains indifferently paved with granite; in 1872 poudrette manufacture was started in the middle of both Ootacamund and Kándal, an incinerator was erected on an equally ineligible site and, for the first time, small-pox appeared with virulence. In 1873 convicts were employed on the reclamation of part of the borders of the lake; in 1874 the mutton-butchers were given a room in which to keep their meat, which up to then they had been wont to store in the kitchens and bedrooms of their own houses; and the bazaar drains were patched; and in 1876 the improvement of the conservancy of the latrines engaged attention and the poudrette factory was removed outside the town.

None of these steps, however, went to the root of matters, and in 1877 cholera became established for the first time in the place and small-pox was epidemic. Government then directed the Surgeon-General, the Sanitary Commissioner and the Commissioner of the Nilgiris to form themselves into a committee to report on the sanitary condition of the place and to suggest methods of improving it. Their report (which covered 200 pages of printed foolscap—*cacoethes scribendi* seems to have been endemic among the medical officers of those times) gave many unpleasant details regarding the existing condition of the town; proposed that the municipality should be abolished and its duties entrusted to one capable officer; revived the question of the removal of the main bazaar to Kándal; and dealt with schemes of drainage and water-supply. But it was not unanimous and it contained few definite recommendations; and consequently it led to little.

Three years after it was sent in, Government appointed another and larger committee, which included engineering as well as sanitary experts and also some of the more prominent non-official ratepayers, to consider the questions of extending the market and improving the drainage and water-supply (which three things were far more emergent than any others) and the submission of this body's report was followed by the first really active effort in these matters.

Changes in the system of administration also facilitated advance. Up to 1882 the chief executive officer of the council had been the Special Assistant Collector and his successor the Assistant Commissioner, both of whom had their hands full of other work. In that year the latter's place was taken by a vice-president chosen from among the councillors; in 1884, when the existing Municipal Act was passed, a paid secretary was appointed; in 1895 a salaried chairman was put in executive charge; in 1897 an amending Act gave the council enhanced powers of taxation; in 1899 an Engineer on a salary of Rs. 700 was made chairman, an arrangement which still continues: and now the recent Hill Municipalities Act will further increase the revenue and powers of the council. This body's income is at present nearly two lakhs, or ten times what it was 30 years ago; but this is still insufficient for its daily increasing needs. Since 1884 it has had to borrow 4½ lakhs (half in the open market and half from Government) and in the last ten years it has received grants from Government amounting to Rs. 3,87,000 besides a special contribution of Rs. 73,000 towards the new drainage scheme referred to below.

It remains to sketch shortly the history of the market and of the drainage and water-supply schemes. Much fuller details will be found in Sir Frederick Price's book, which has been freely indented upon.

The market.

The first market was built in 1847–48 at the personal suggestion of the Marquis of Tweeddale and cost Rs. 5,800. It still forms part of the rectangular block in the centre of the present enclosure. Fees were first collected in 1864 and the proceeds applied to the improvement of the building. In 1867–68 two small wings were added; but it was not until 1885 that any notable extensions were made. In that year two large buildings, one of which is now used for grain and the other as the meat market, were built at a cost of Rs. 61,000. Eight years later the existing stalls for European vegetables, fruit, poultry, eggs and fish, and the rooms for storing meat were completed at an outlay of Rs. 22,000; and in 1903–04 corrugated iron sheds for the sale of native vegetables, costing Rs. 4,800, and iron palings all round the enclosure, value Rs. 6,600, were erected. The revenue derived from the fees collected is now larger than that of any municipal market in the Presidency except Trichinopoly; and 'shandy day' (Tuesday) is a crowded holiday during which natives in the town can with difficulty be prevailed upon to do any work. In the old leisurely days all public offices used

CHAP. XIV. OOTACAMUND MUNICIPALITY. — Drainage.

actually to be closed at noon on market day so that the clerks might be able to purchase their supplies for the ensuing week.

The first definite action towards the draining of any part of Ootacamund was the deputation, in 1867, of Major Tulloch, R.E., who had made a special study of such subjects, to devise a scheme for the main bazaar. He proposed to lay an egg-shaped brick sewer along the margin of the lake from the point where the supply stream ran into it down to the outfall. This was to carry sewage only, and not storm-water, and was estimated to cost Rs. 74,000. House and street drains were not provided for or designed, Captain Tulloch declaring them a simple matter. Government decided that the cost of the sewer was too high, and nothing was done.

In 1870–71, as already mentioned, the streets in the bazaar were properly sloped and paved drains were provided for them, the work being part of a kind of general scheme prepared by Major Farewell, the District Engineer. In 1879 Major Morant, R.E., also District Engineer, drew up a more complete project providing for open surface drains to carry both sewage and storm-water into the lake and estimated to cost Rs. 32,900. In 1881 Mr. O'Shaughnessy, then Local Fund Engineer, elaborated this and prepared four detailed estimates which ranged from Rs. 57,200 to Rs. 86,400 according to the material used for the drains. It was however generally agreed that it would never do to run sewage into the lake and that an intercepting sewer must be constructed to carry it down to the lake outfall. The committee of 1881 above referred to recommended that Captain Tulloch's sewer should be built for this purpose. Eventually an improved edition, costing Rs. 94,000, of the most expensive of Mr. O'Shaughnessy's four schemes (that which provided for drains made of stone) was sanctioned in 1883; and in the following year a sum of Rs. 40,000 more was passed for a square brick intercepting sewer from Glendower Hall to the Willow Bund and Rs. 66,935 for an iron pipe sewer running from thence along the margin of the lake to the lake outfall. These three undertakings were completed in March 1887.

The brick intercepting sewer, however, has given trouble ever since. It often became silted up and it did not fulfil its one duty—that of keeping sewage out of the lake—as it so often overflowed through its manholes. The Sanitary Engineer reported in 1890 that its fall was too small, its section unsuitable, and the arrangements for keeping silt out of it defective; and in 1893 the portion from the market to the Willow Bund was replaced by

a nine-inch stoneware pipe, laid at a somewhat steeper gradient, at a cost of Rs. 11,300.

But the sewer continued to act badly—silting up, leaking and overflowing until it became a perennial nuisance—and in 1897, on the advice of the Sanitary Board, the nine-inch pipe was pulled up and replaced by one three inches bigger and a flushing-sluice on the stream which feeds the lake was provided at the head of the sewer near Glendower Hall. The work was done by the Public Works department and cost Rs. 41,680. In the following year, however, it was found that the upper section of the sewer, from the market to Glendower Hall, which still consisted of the old square brick construction above described, was too weak to carry any proper head of water for flushing and it was replaced by a twelve-inch stoneware pipe at a cost of Rs. 14,600. It was also discovered that the iron pipe sewer along the margin of the lake had got out of alignment and leaked in several places, and this was put right and provided with manholes at a cost of Rs. 10,000. In 1903 the Sanitary Board examined the whole position afresh and came to the conclusion that the intercepting sewer needed to be entirely regraded and supplied with flushing tanks placed on the high ground above it; and this is now being done as part of the general drainage scheme referred to below. Meanwhile (in 1893) the drainage of Kándal by open channels discharging into a sewer had been carried out at a cost of Rs. 35,000 of which Government gave half.

In 1903 the Sanitary Engineer drew up, under the orders of Government, a comprehensive scheme for the complete drainage of the whole town on modern lines with closed pipes and numerous house connections. This divided the place into fourteen blocks, including the main bazaar, each of which was to be treated separately, and provided for the regrading and flushing of the main sewer already mentioned, and for the establishment of a septic tank and sewage farm below the outfall of the lake alongside the new Paikára road. This extensive scheme met with little approval locally, the council and the Collector doubting whether closed drains were suited to the ways of the natives or could be properly flushed with the scant amount of water available. It was sanctioned in 1905-06, the estimated cost being Rs. 3,83,020, and is now in progress, Government having made a large grant towards it.

Water-supply

For many years the residents of Ootacamund were dependent for their water upon wells, springs and streams. It was not until 1865 that the first systematic supply was established and

CHAP. XIV. OOTACAMUND MUNICIPALITY.

water from the southern slopes of Dodabetta was brought to a few of the houses in the south-west corner of the town by the aqueduct over the Coonoor road which for so many years marked the entrance to the station, was subsequently replaced by underground pipes, and eventually collapsed in 1904.

The next step was the preparation in 1868 by Major Farewell, District Engineer, of a scheme to supply the houses lying to the north of the lake from a reservoir (now the Marlimand reservoir) and the streams which flowed down the sides of Snowdon Hill to the north of Snowdon House and above the Government Gardens. These streams had already, in 1864–65, been tapped at a cost of Rs. 650 in order to supply water for the construction of the Collector's office and St. Bartholomew's Hospital, which were then being built. Major Farewell's scheme also included a smaller reservoir on Dodabetta (the existing 'Dodabetta reservoir') to increase the supply brought over the aqueduct above mentioned to the houses to the south of the lake. In both cases, to save expense, the water was to be brought in open channels.

His proposals were sanctioned, and by 1870 both reservoirs were completed. The Dodabetta reservoir scheme, the channel of which was $5\frac{1}{2}$ miles long, was handed over to the council on the first day of 1871; and the Marlimand project, the execution of which had in some ways proved unexpectedly troublesome, in 1873–74.

The Marlimand supply.

In 1877 Captain Morant, R.E., drew up a scheme for improving the north (Marlimand) supply by, among other things, adding three more reservoirs. His estimates amounted to Rs. 1,23,692, and the council applied to Government for a loan of this sum; but eventually the project was dropped. Captain Morant's report pointed out that both the Marlimand and Dodabetta reservoirs were polluted by the plentifully-manured tea and other cultivation which lay within their catchment areas and that immense wastage of the supply in them, and also further pollution, was caused by carrying their water into the town in open channels. The committee of 1881 above referred to proposed accordingly to run intercepting drains round the cultivated portions of both catchment areas, making up the loss of water thus occasioned by tapping new tracts, to fence the whole of the catchment areas, and to pipe both supplies. The rough estimates for these improvements to the two sources of supply amounted to about Rs. 1,79,000 and Rs. 75,000 respectively; but the Government of India would not lend the money for them or permit the Madras Government to do so, and it was not until 1886 that any action followed.

In that year an estimate for Rs. 1,70,000 for improving the Marlimand supply was sanctioned from Provincial funds, and the work was completed in April 1889. The improvements followed, in their general principles, the proposals of the committee already mentioned. Part of the existing catchment area was cut out because it was contaminated, and was replaced by a collecting ground on Snowdon Hill which was the source of several rivulets. These were intercepted and carried to the reservoir in a covered channel. A service reservoir (the 'Snowdon ponds') was made near Snowdon and the supply channel from Marlimand to the town was piped throughout. House connections were laid subsequently, partly at the cost of the owners of the buildings benefited.

The sanitary experts continued, however, to pass uncomplimentary remarks regarding the quality of the Marlimand water, pointing out that a large bog lay at the head of the reservoir and that part of the catchment area consisted of the Tudor Hall tea estate, with the dwelling-house and cooly lines thereon; and in 1895 the Sanitary Board even went so far as to recommend that the reservoir should be practically abolished and the Snowdon ponds greatly enlarged to take its place.

In 1896 Mr. G. T. Walch, who had just retired from the post of Chief Engineer for Irrigation and was residing at Ootacamund, was appointed to consider the whole question of the water-supply of the station. In the case of the Marlimand supply he suggested that the Tudor Hall estate should be acquired; that the channels leading the Snowdon streams to the Marlimand reservoir should be lined with masonry; that a certain stream above the Government Gardens should be diverted into them; and that all the water from the reservoir should be filtered. Government agreed to his proposals regarding the Snowdon channels and they were carried out. The filters and the acquisition of Tudor Hall were thought unnecessary; but the latter was subsequently agreed to, and in 1899 two lakhs were paid for 178 acres of the estate.

The Dodabetta reservoir.

The Dodabetta reservoirs had meanwhile attracted attention. There are really two of them; but the smaller of these, which is about 300 yards lower down the valley than the larger one and 160 feet below it in level, is little more than a pond the chief supply to which is the surplus from its bigger neighbour. In 1889 the Surgeon-General pointed out that cultivation lay within the catchment basin of the upper reservoir and that the delivery channel was polluted by the village which stands near the old aqueduct. He recommended that the channel should be piped; and this was

CHAP. XIV. OOTACAMUND MUNICIPALITY.

effected by the end of 1892 at a cost of Rs. 38,000. Mr. Walch's report suggested that the private land within the catchment area of the upper reservoir should be acquired (which was eventually done in 1899) but otherwise proposed no great changes in this part of the town's supply.

The Kodapamand reservoir.

His recommendations however included, besides improvements to existing sources, the construction of two entirely new reservoirs, one above Kodapamand and the other on the Tiger Hill stream on Dodabetta. Both were eventually carried out.

The former of them had originally been designed by Mr. Nery, then municipal engineer, in 1893; and it is formed by a low dam, placed across the Kodapamand stream above all sources of contamination, whence pipes run to the hamlets of Kodapamand and Vannárapéttai (where most of the dhóbis live) and the houses along the Kótagiri road—see the map at p. 357. It cost Rs. 12,160.

The Tiger Hill reservoir.

The Tiger Hill reservoir is a far more ambitious project. It was carried out between 1901 and 1904 and cost Rs. 1,26,738, of which Government gave Rs. 40,000. It lies so far up the slopes of Dodabetta that it commands even the highest parts of the station and is thus of great use in supplementing the supply from Marlimand. Its catchment area includes that of the upper Dodabetta reservoir (the private land within both was acquired in 1899 at a total cost of Rs. 42,120) and it receives the surplus of this when it overflows—which it does during much of the year. The masonry dam across the Tiger Hill stream which forms the reservoir is 42 feet high, five feet wide at the top and 27 feet at the bottom. The water runs thence through a six-inch pipe to near Walthamstow, down to Charing Cross, and up to St. Stephen's Church, just above which it joins the main from Marlimand.

Checking of overcrowding.

A further matter which of late years has occupied much of the municipal council's attention, and which is certain to become more pressing as years go by, is the overcrowding to be found in the main bazaar. This great block of buildings has grown up at haphazard, little by little, without any guiding hand; and now contains many exceedingly insanitary spots, traversed only by narrow lanes, where the people are huddled together to an extent which makes them a danger to the rest of the station when disease breaks out. The council has bought up one or two of the worst of these spots and improved them, and has opened out others; but to knock down houses without providing substitutes only results in further crowding in those which are left. In 1903, therefore, the council resolved to acquire land just to the north of the Kánda[1]

bazaar, establish a new suburb there, and move thither the inhabitants of the worst portions of the main bazaar. The advantage of the Kándal site is that it lies in a valley quite distinct from that of the Ootacamund lake and can thus be drained with comparatively little difficulty.

The cost of the scheme, including compensation for houses removed, laying out the new suburb, making roads through it and supplying it with water and drains, worked out to as much as Rs. 2,80,000. The council made a beginning by spending Rs. 32,000 in acquiring 39 acres for the site, which it proposed to lease in small plots subject to a low ground-rent.

The council subsequently proposed to acquire another site for a new suburb in the valley behind Bishopsdown, which, like Kándal, is outside the catchment area of the lake. But Government discouraged the project and no action has been taken.

CHAPTER XV.

GAZETTEER.

Coonoor Taluk —Aravankád—Athikárihatti-- Barliyár— Bérganni —Coonoor—Dénád—Dimhatti —Hulikal Drug — Kátéri — Kengarai— Kéti--Kódanád—Kónnakarai—Kótagiri—Kulakambai—Mélúr --Rangasvámi Peak—Wellington. Ootacamund Taluk—Ánaikatti — Avalanche — Billikal—Kalhatti—Masinigudi — McIvor's Bund-- Mélkundah —Múkarti Peak — Naduvattam – Nanjanád — Ootacamund— Sispára – Túnéri. Gúdalúr Taluk—Chérambádi—Déväla — Gúdalúr — Mudumalai--Nambalakód— Nellakóttai—Nelliálam—Ouchterlony Valley—Pandalúr.

COONOOR TALUK.

CHAP. XV. Coonoor.

Coonoor, which is named after its head-quarters, is the more easterly of the two taluks on the plateau and includes the old divisions of Péranganád and Mérkunád. Its limits and shape sufficiently appear from the map in the pocket at the end of this volume and statistics regarding it are given in the separate Appendix. The places in it worth a note are the following :—

Aravankád (Arvenghát): A valley in the revenue village of Vubatalai lying three miles from Coonoor on the road to Ootacamund. The name is supposed to mean 'the jungle of *hariali* (*doob*) grass.' The place was originally known[1] as 'Sappers' Valley' because the Sappers and Miners who made the first rough road from Coonoor to Ootacamund had their camp there. In 1857 the Castle Brewery (see p. 289) was established in this valley, the site being selected on account of the excellent water available, and the records of those days refer to the place under the names 'Glen Owen', 'Glen Arven' and 'Arvan Ghaut.'

The old road and the new railway from Coonoor to Ootacamund both pass through the valley and the latter has a station there.

Aravankád is now best known for the Government Cordite Factory which has been established there, the red buildings of

[1] See Ouchterlony's survey report in M.J.L.S., xv, 46, and his map in the second edition of Baikie's *Neilgherries*.

which form a small town by themselves with the residences of the officers in charge perched prominently along the top of a ridge above them.

The establishment of a Cordite Factory in India was sanctioned by the Secretary of State in the latter half of 1899, experiments previously carried out at Kirkee having proved the feasibility of making that explosive in this country. The building of the factory began in May 1900 and manufacture in July 1904.[1]

The site selected stands about 6,000 feet above sea level, and the main gate is on the Coonoor-Ootacamund road about four miles from the Coonoor railway-station. The position is suitable owing both to its equable and temperate climate and to the general lie of the ground, which latter renders possible the isolation of danger buildings in separate hollows and the erection of the various parts of the factory in such a manner that water and other liquids can be run by gravity from one to another as required.

The factory is run by hydro-electric power, which is obtained at the Kátéri falls, distant about 3½ miles as the crow flies. Just above the falls a dam 38 feet high has been built across the outlet of a natural basin and a reservoir with a storage capacity of 12¼ million cubic feet has been formed. From this the water is carried to the power house at the foot of the falls by a 24-inch riveted steel pipe approximately 2,100 feet in length. The difference in level between the dam and the power house is 650 feet, giving an effective head pressure of 620 feet.

The power house is 100 feet long by 30 feet wide and 34 feet high to the eaves, and is designed to contain the whole of the generating plant. This consists of four 125 K. W. sets and one 500 K. W. set (three-phase, alternating current, 40 cycles) giving current at 5,000 volts, fitted with hydraulic turbines of the 'modified Gerard' type; the generators are separately excited from direct current generators (output 280 ampères at 110 volts) fitted with turbines of the same type as above of 37 H. P. each.

The high-tension power transmission lines to the transformer house at the factory are each No. 1 S.W.G. copper wire carried on steel posts with wooden arm-brackets. In the transformer house there are five transformers (5,000 to 380 volts) of the three-phase air-cooled type.

[1] For the following account of it I am indebted to the courtesy of Major D. M. Babington, R.A., its Superintendent.

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Power within the factory both for running machinery and for lighting purposes is distributed on the underground system, the cables being laid in earthenware troughing and cast up with pitch (solid system). The motors at the various buildings vary in size from 3 B.H.P. to 60 B.H.P., each of them (except the small ones) having its own switch, starting-box and ammeter placed in a convenient position.

Owing to the distance apart at which it is necessary to place danger buildings, the factory proper covers a considerable area of ground. It is divided into the following nine branches: Acid, Gun-cotton, Nitro-glycerine, Cordite, Cannon Cartridge, Mechanical, Plumbers, Laboratory and General. The first five of these are the main manufacturing branches.

Acid Branch. In a factory for the manufacture of cordite in India the supply of acids is a most important matter. It is impossible to purchase them in the country and the cost of importing them from Europe is prohibitive. It was therefore necessary to instal plants at Aravankad not only for manufacturing both nitric and sulphuric acids but also for reconcentrating 'waste' acids, *i.e.*, those which had been used in the manufacture either of gun-cotton or nitro-glycerine.

After manufacture, the strong acids are mixed in the proportion required for the manufacture of gun-cotton and nitro-glycerine and are stored in steel boilers each holding between 30,000 lb. and 35,000 lb.

Gun-cotton Branch. The manufacture of gun-cotton is effected as follows: Cellulose in the form of cotton waste, having been picked over by hand, 'teased', and dried, is treated with strong nitric acid, sulphuric acid being used to absorb the water formed and so keep the nitric acid concentrated. During this treatment the cellulose, without changing in outward appearance, is nitrated, *i.e.*, turned into gun-cotton. The gun-cotton is then wrung in a centrifugal machine to get rid of surplus acid, next washed several times in cold water, again wrung and finally taken to the vat house to be boiled. It afterwards passes through 'beaters' which cut it up into a fine impalpable pulp, and is next run into a 'poacher' in which it is blended and given a final washing preparatory to pressing it into primers or slabs etc. according to whether it is required for the manufacture of cordite or for use by itself. For the manufacture of cordite the gun-cotton is pressed lightly into primers and dried.

Nitro-glycerine Branch. The manufacture of nitro-glycerine is an exceedingly dangerous operation, and visitors to the factory

(unless specially authorized) are not allowed to enter this branch. The substance is made by slowly running glycerine into a mixture of nitric and sulphuric acids. It is a heavy oily liquid which will not mix with water, and it is well washed both with soda solution and pure water, dried and filtered. It is then mixed with dry gun-cotton for the manufacture of cordite.

Cordite Branch. The gun-cotton and nitro-glycerine, after being partially mixed by hand in the nitro-glycerine branch and converted into 'paste', are forwarded to the cordite branch. Here in the main building the paste, to which a solvent (acetone) and a small percentage of mineral jelly have been added, is kneaded in incorporating machines until it is thoroughly mixed and gelatinized, the product being known as 'dough.'

This dough is then taken to the presses, which are situated in the same building, and squirted through dies of different sizes according to the diameter of cord required and thus converted into cordite. To the layman, this is perhaps the prettiest operation in the series and he never fails to be struck with the ease and apparent safety with which the innocent-looking yellow cords are wound off on reels and chopped into given lengths.

The cordite is next placed in trays and allowed to dry so that the acetone and any other volatile matter may be driven off. It is then 'blended' to ensure uniformity, and is finally packed and despatched either to the ammunition factories at Dum-Dum and Kirkee or to the cannon cartridge branch in this factory.

Cannon Cartridge Branch. In this branch the cordite manufactured in the factory is made up into cartridges. Cannon cartridges (except those for quick-firing guns) are made here, and in these the cordite is placed in silk or shalloon cloth bags which are stamped with the nomenclature etc. of the cartridge.

The names of the four remaining branches sufficiently explain the nature of the work carried on in them and they need no description.

The total European staff of the factory is as follows: Superintendent, Assistant Superintendent, Danger Building Officer, Manager and three Chemists, Chief Mechanical Engineer, Mechanical Engineer, Chief Foreman Plumber, three Electrical Engineers, and 43 Foremen, Assistant Foremen, Soldier Mechanics and Leading Hands. The average number of native workmen employed is about 950. The factory is easily capable of turning out all the cordite required for India.

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Athikárihatti: Seven miles west of Coonoor, population 3,245. Is a village of the Athikári section of the Badagas; whence its name. The story goes that these people, under a leader named Karibetta Ráya, came from Sarigúr in Mysore territory and settled first at Nellitarai (a short distance south-west of Méttupálaiyam) and afterwards at Túdúr (on the plateau west of Kulakambai) and Tadasimarahatti (to the north-west of Mélúr) and that it was they who erected the sculptured cromlechs of Túdúr and Mélúr referred to on p. 100.

Túdúr and Tadasimarahatti are now both deserted; but in the former a cattle-kraal, an old shrine and a pit for fire-walking may still be seen, and in the latter another kraal and one of the raised stone platforms called mandaikallu by the Badagas. Tradition says that the Badagas left these places and founded Athikárihatti and its hamlets instead, because the Kurumbas round about continually troubled them with their magic arts and indeed killed by sorcery several of their most prominent citizens.

The hamlet of Muttinád, about a mile north-east of Athikári-hatti proper, is the place where are made most of the coffee-wood and other walking-sticks which are so industriously hawked about Ootacamund and Coonoor.

Another mile further on in the same direction is Kollimalai, the only Kóta village in the Mérkunád.

Barliyár: About seven miles down the ghát from Coonoor to Méttupálaiyam, population 2,234. The Barli river is here crossed by the ghát road and a chattram stands close by. Before the railway diverted so much of the road traffic, the spot was a well-known halting-place on the ghát road and the population was larger. To the north of it is a hamlet of Kurumbas. The Government Garden here has been referred to in Chapter IV.

Bérganni: A hamlet of the revenue village of Nedugula situated about four miles in a straight line north of Kótagiri. It is famous among the Badagas all over the plateau for its temple to Hétti or Héttamma, the apotheosis of a woman who committed sati. There are other similar shrines to her and other victims of sati in other villages, but that at Bérganni is far the best known of them, and vows and visits are made to it even by the Badagas living near the distant Kundahs. Vows generally take the form of dedicating a cow or she-buffalo to the shrine, and the institution now possesses about a hundred animals obtained in this way. They are looked after by a pújári who is always a youth under the age of 21, lives within the temple (which is just like an ordinary Badaga house) and uses it as the dairy. His position and duties

resemble curiously those of the Tóda pálol (see p. 140) and have apparently been imitated therefrom. He is forbidden, for example, to have anything to do with (or even to look upon) any woman so long as he holds office, and if he suspects that any of the fair sex are anywhere near when he wants to leave the shrine, he raises a shout as a signal for them to scatter and hide; his office, like the pálol's, is temporary, and when he reaches the age of 21 he quits it, marries, and becomes as other men; his duties are to tend the sacred cattle and he lives on their milk and ghí; and once a year, at the annual festival, he is presented with his clothing for the next twelve months—a turban, upper cloth and waist-cloth, all of which are specially woven for him on the spot by Sédans (Tamil weavers) specially imported for the purpose from the plains. This annual festival is the occasion when those who have made vows bring up their cattle to dedicate them to the shrine, but otherwise the ceremonies thereat are not peculiar.

On the tops of the hills round about Bérganni are at least thirteen cairns, of which only two appear to have been opened by Breeks.

Coonoor: Head-quarters of the Coonoor subdivision and taluk, a municipality, and the second largest town in the district. According to the 1901 census, its population was 8,525 souls, but this enumeration was made in March, before the annual influx of hot-weather visitors and their following had begun, and in the height of 'the season' the numbers are much greater.

The place is built round a wide, broken valley on the edge of the crest of the plateau at the head of the great ravine up which run the road (21 miles long) and railway (16·90 miles) to it from Méttupálaiyam, and some of its houses command views down this ravine and across it to the plains below. This gives the Coonoor scenery an advantage over that of Ootacamund, which stands in the middle of the plateau; but on the other hand the dense mists which in the evenings often roll up the ravine from the lower ground are a corresponding drawback. The place is eleven miles from Ootacamund by the ghát road and is some 1,500 feet lower down, the Coonoor church being 5,954 feet above the sea and St. Stephen's at Ootacamund 7,429 feet. This difference in elevation makes Coonoor warmer, more suited to sub-tropical plants (such as tree-ferns) and to roses, more relaxing, but less trying to the liver and lungs; moreover the heights to the west of it keep off the worst of the long south-west monsoon which is apt to be so depressing at Ootacamund, though it suffers more than that place from the north-east rains and the strong east wind

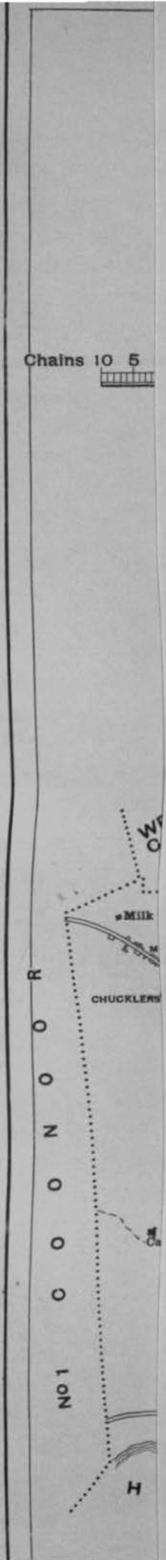
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which follows them; further, the sites along the edge of the plateau overlooking the ravine and those on the high ridge which bounds the station proper on the north are unequalled for residences by any in Ootacamund; and finally the bazaar lies in a separate hollow away from, and below, the European quarter. For all these reasons, many visitors to the hills forgive the place the cramped site which is its chief disadvantage and prefer it to Ootacamund. Lady Wenlock rented the house at Coonoor called 'Brooklands' for two seasons and lived there, instead of at Ootacamund, a great part of that time.

In a valley adjoining Coonoor and on the ridges above it stands the Wellington Cantonment referred to below, and the two places, though under different forms of administration, practically form one town. Just beyond Wellington, but four miles up the road from Coonoor to Ootacamund, is the Aravankád Cordite Factory.

The map attached will give some idea of the lie of Coonoor, though on so small a scale it is not possible to show hill contours. The great ravine mentioned above lies south of it, on either side of the Kátéri river, and on the top of the precipitous further side of this, facing Coonoor, is perched the old fort of Hulikal Drug referred to below. The lowest point in the town proper is near the railway-station and the now defunct Ashley engineering works, close to which three streams which drain the neighbourhood unite and fall over the rocky lip of the plateau under the name of the Coonoor river to join the Kátéri stream a thousand feet below. On this Coonoor river, near its junction with the Kátéri, is a pretty cascade known (from the officer who built the ghát road) as 'Law's fall'; and a little lower down the torrent is crossed by the iron girder 'Wenlock bridge,' which carries the ghát road over it.

West of the Coonoor railway-station, on the low ground near the municipal office and market and also up the Mount Road leading to the hospital, is built the native bazaar; and well above this, on a long high ridge which runs from Sim's Park to the Glenview hotel and is crossed by a convenient saddle at the post office (see the plan) are some of the best residential sites in the place. A conspicuous point from many of them is the hill known as Teneriffe (the 'Coonoor Betta' of the maps), which is 6,894 feet high, or only 334 feet below the Ootacamund lake. At the northern end of this ridge, near Sim's Park, two spurs run out to the east and west and on these, along the roads which lead respectively up to Kótagiri and down into the valley which divides Coonoor from Wellington, are other excellent sites.



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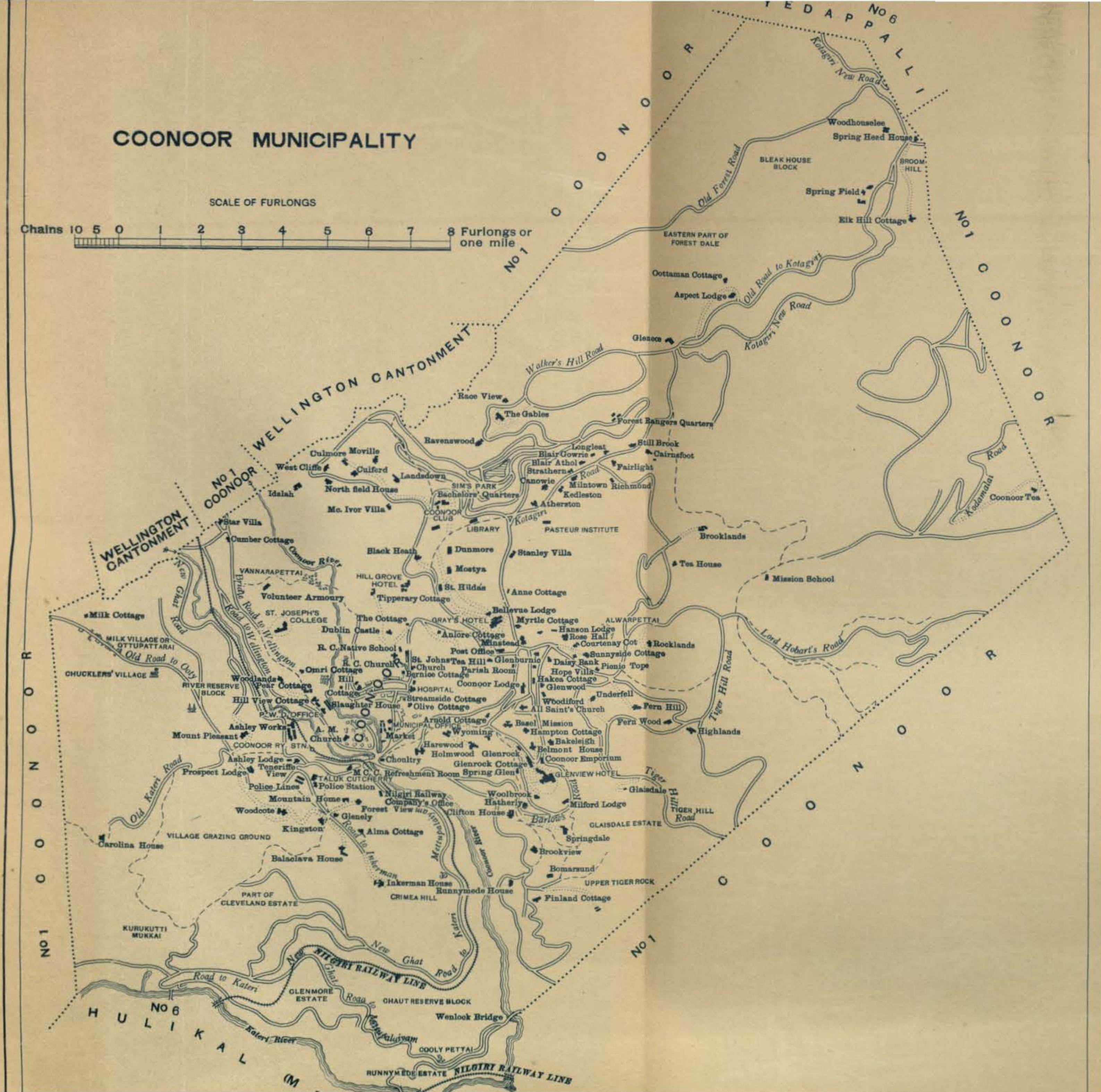
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which follows them; further, the sites along the edge of the plateau overlooking the ravine and those on the high ridge which bounds the station proper on the north are unequalled for residences by any in Ootacamund; and finally the bazaar lies in a separate hollow away from, and below, the European quarter. For all these reasons, many visitors to the hills forgive the place the cramped site which is its chief disadvantage and prefer it to Ootacamund. Lady Wenlock rented the house at Coonoor called 'Brooklands' for two seasons and lived there, instead of at Ootacamund, a great part of that time.

In a valley adjoining Coonoor and on the ridges above it stands the Wellington Cantonment referred to below, and the two places, though under different forms of administration, practically form one town. Just beyond Wellington, but four miles up the road from Coonoor to Ootacamund, is the Aravankád Cordite Factory.

The map attached will give some idea of the lie of Coonoor, though on so small a scale it is not possible to show hill contours. The great ravine mentioned above lies south of it, on either side of the Kátéri river, and on the top of the precipitous further side of this, facing Coonoor, is perched the old fort of Hulikal Drug referred to below. The lowest point in the town proper is near the railway-station and the now defunct Ashley engineering works, close to which three streams which drain the neighbourhood unite and fall over the rocky lip of the plateau under the name of the Coonoor river to join the Kátéri stream a thousand feet below. On this Coonoor river, near its junction with the Kátéri, is a pretty cascade known (from the officer who built the ghát road) as 'Law's fall'; and a little lower down the torrent is crossed by the iron girder 'Wenlock bridge,' which carries the ghát road over it.

West of the Coonoor railway-station, on the low ground near the municipal office and market and also up the Mount Road leading to the hospital, is built the native bazaar; and well above this, on a long high ridge which runs from Sim's Park to the Glenview hotel and is crossed by a convenient saddle at the post office (see the plan) are some of the best residential sites in the place. A conspicuous point from many of them is the hill known as Teneriffe (the 'Coonoor Betta' of the maps), which is 6,894 feet high, or only 334 feet below the Ootacamund lake. At the northern end of this ridge, near Sim's Park, two spurs run out to the east and west and on these, along the roads which lead respectively up to Kótagiri and down into the valley which divides Coonoor from Wellington, are other excellent sites.



Round Tiger Hill, on the southern limit of the station, runs a drive commanding beautiful views of the plains, and this goes on into Lord Hobart's road, which leads along the very edge of the plateau, overlooking the low country, to Lamb's Rock, Lady Canning's Seat and the Dolphin's Nose (called Múkkumalai by the natives), a curious peak which is very prominent from the plains.

Sim's Park is so named from its founder, Mr. J. D. Sim, C.S.I., Member of Council in 1870–75, who during the last few years of his residence in India devoted much time and attention to forming it and laying it out. It has already been referred to on p. 206 above.

The Glenview hotel, formerly known as Davidson's, is the oldest hotel in Coonoor and was mentioned in appreciative terms by Burton as far back as 1847. As its name implies, it is built on the very edge of the ravine. Two other excellent hotels are Gray's (formerly known as 'the Union hotel') and Hill Grove, which also stand on the ridge already referred to.

The Tiger Hill and Lord Hobart's roads were made between 1873 and 1875, and in the latter year the second of them was named in memory of the Lord Hobart who had been Governor of Madras since 1872 and had just died at Madras.

Lamb's Rock was so called[1] by the then Collector, Mr. E. B. Thomas, after a Captain Lamb who had gone to much trouble and expense in opening up a path to the place. The rock is a perfectly sheer precipice of several hundred feet rising straight up from the Coonóor ravine and commanding gorgeous views across this and down to the plains. It is a most popular spot for picnics.

Lady Canning's Seat (also named by Mr. Thomas) commands similar, but even more wonderful, views and is marked by a small summer-house built just above the road at the point where it rounds a great shoulder of rock 4½ miles from Coonoor. Charlotte, Countess Canning, wife of the then Viceroy, visited Madras, Bangalore and the Nilgiris during the Mutiny. She apparently came up by the Sígúr ghát, and she arrived at Coonoor from Ootacamund on the 7th April 1858, her party occupying three detached bungalows which now form part of the Glenview hotel and in which Lord Dalhousie had previously stayed from May to August 1855. In *The Story of Two Noble*

[1] For this and other items of interest I am indebted to Mr. Alexander Allen, one of the oldest residents in Coonoor.

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Lives [1] will be found some of the letters she wrote during her stay there and afterwards at Kótagiri. She was enchanted with the place, its climate and the views from it; spent her time riding, walking, sketching and botanizing; compares the view down to the plains with that over the Mediterranean from the Corniche, and the Wellington barracks to the Escurial; and only regrets the distance which separated her from the stirring events which were then proceeding.

Other buildings along the ridge at Coonoor already mentioned which runs from Sim's Park to the Glenview hotel are the Club, the Library, the Pasteur Institute and All Saints' Church.

The Club began with a tennis court or two which were situated near the back of the present courts and made in the seventies by General Richard Hamilton, so well known for his papers on sport on the hills written over the *nom de plume* of 'Hawkeye.' Mr. Gray of Gray's hotel, to whom the land belonged, eventually put up a small room there, which is still standing. Later a regular 'Tennis club' was established on the spot and in 1894 the adjoining house, 'Blackheath,' was rented. On the 1st September 1897 the Club moved into the original portion of the present club-house, which had just been built. Later on the Assembly Rooms close by, the squash racquet court, the chambers, the rink and the billiard room were built in turn, the last being finished in 1906.

The Library was started in 1864 and at first was located in the building now occupied by the post office. When the Assembly Rooms just mentioned were put up, a small room in them was allotted to the library, and in 1903 the present large building was erected from debentures at a cost of Rs. 20,000 from designs by Major E. R. B. Stokes-Roberts, R.E. Mr. Gray made a gift of the land.

The Pasteur Institute has recently been opened. It is designed to provide for Southern India the benefits which the similar institute at Kasauli confers upon the north, and was built chiefly from a munificent donation presented to Lord Curzon, when Viceroy, for such purposes as he might select, by Mr. Phipps, an American subject. The estimates for the main building were Rs. 60,480, for subsidiary buildings Rs. 10,750 and for the land Rs. 8,750. These do not include furniture and miscellaneous needs.

[1] By Augustus J. C. Hare (George Allen, London, 1893).

The foundation stone of All Saints' Church was laid on 3rd September 1851 in the presence of the Chaplain, the Hon. Mr. J. F. Thomas (Member of Council), Major-General Brackley Kennett of the Bombay Army, Mr. E. B. Thomas (the Collector), Captain P. M. Francis, Madras Engineers (the architect), and others. Services used previously to be held in a room in 'The Lodge,' next door, the house of General Kennett. He made a free gift of the land for the church and took great interest in its construction. The residents of Coonoor subscribed Rs. 6,000 for the edifice, but this was insufficient either to provide the best materials or to secure speedy work; and the monsoon of 1852 burst before the roof was on, with the result that the tower and most of the eastern wall, which were made of inferior bricks laid in clay, came down. Up to then Rs. 6,632 had been spent.

Government was applied to for assistance and sanctioned a sum of Rs. 4,674 for completing the work, but declined to pay the cost (Rs. 1,250) of rebuilding the tower. This latter item had in the meantime been completed from additional private subscriptions (the total amount of which had risen to Rs. 8,983) and eventually Government sanctioned a further allotment which brought its contribution up to Rs. 7,177 and the total cost of the building to Rs. 16,160. General Kennett presented to the church (at a cost of Rs. 800) a clock and an east window, much of the glass in which was painted by his own hand, and Mr. J. F. Thomas gave a font worth another Rs. 300. The building was consecrated on 18th March 1854.

General Kennett was murdered in The Lodge in October 1857. The crime was instigated by a Musalman of Cawnpore who had opened a cloth bazaar in Coonoor and borrowed money from the General, and he and his accomplices broke into the house during the night and stabbed their victim so severely that he died five days later. Three of them were hanged.[1] The General is buried in the All Saints' cemetery.

Up to 1859 Coonoor was an appanage of the chaplaincy at Wellington, but in May of that year the station was made into a separate chaplaincy with Coimbatore and Pálghát as out-stations. In 1863 Government made the church a grant of a sum of Rs. 6,790 which had been lately expended in repairing its roof, altering and improving the seats and building a compound wall; and supplied it, from the Madras arsenal, with a new bell in place of its old one, which had cracked. Next year half the

[1] See *Reports of Criminal cases determined in the Foujdaree Udalat*, viii, 56–66.

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sittings were let for fixed amounts to raise a fund for the maintenance of the choir, clock, etc.

In 1874 the Bishop asked for a grant for adding a chancel; but the Government remarked that they had already given Rs. 7,177 for the construction of the church and another Rs. 12,530 for its improvement and repair, and could afford no more. Eventually about Rs. 6,000 were raised by public subscription and from the Diocesan Church Building Fund, and on 19th August 1879 the foundation stone of the chancel was laid by Bishop Gell. The designs were executed by Major J. L. L. Morant, R.E., District Engineer of the Nilgiris, who had a special penchant for ecclesiastical architecture, and they were approved by Colonel (formerly Captain) Francis, the original architect of the main building. The work consisted in slightly lengthening the nave, erecting a chancel, supplying a new east window in place of General Kennett's, making a vestry, and other minor items.

The cemetery was enlarged in 1885; in 1888 the building was roofed with Mangalore tiles; and in 1894 the chancel was altered to make room for a new organ. All these improvements were done at Government cost.

The church stands in a neat churchyard planted with weeping cypress trees, *Cupressus funebris*. The numerous graves around it (the earliest of which is dated 1852) include those of many soldiers; of the wives of Surgeon-Major Francis Day, whose books on Indian fish are so well known, and of W. S. Lilly, formerly of the Civil Service, who retired on an invalid pension in 1872 and became the author of *On Shibboleths* and other philosophical works; and that of Bishop Gell. In 1905 a new cemetery was laid out on Tiger Hill. A Roman Catholic burial-ground is attached to St. Anthony's Church.

This last, and also the American Mission church, have already been referred to in Chapter III and in Chapter X will be found some account of some of the educational institutions in Coonoor. Municipal matters and the water-supply of the station are mentioned in Chapter XIV and the hospital in Chapter IX.

The growth of Coonoor has been extremely rapid. The first beginnings of the station date from the time when the old steep ghát road up to it from Méttupálaiyam (see p. 228) was made in 1830–32. The camp of the Pioneers who were constructing this was near the present railway-station; and Baikie's *Neilgherries*, which was written in 1833, says (pp. 9, 16) that the six or eight small bungalows which then existed in Coonoor all belonged to

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the Pioneer officers, and that the only public accommodation in the place was at the old travellers' bungalow, which stood on the knoll above the railway-station now occupied by the new taluk cutcherry finished in 1906. The map attached to Dr. Benza's sketch of 1836 of the geology of the plateau [1] also shows only the Pioneers' camp, the travellers' bungalow and the old village of Coonoor. This last (the name of which has been supposed to mean either 'hill village' or 'little village') was a hamlet of the Badaga village of Jakkatalla and then stood just north-east of 'the Fountain' at Wellington. Even in 1838 Surgeon De Burgh Birch, in his *Topographical Report on the Neilgherries*,[2] disposes of Coonoor in eight depreciatory lines, saying that it 'is not a station, but as it once was the place of encampment of the Sappers, it cannot pass unnoticed. It is only just at the summit of the ghát, which is covered with thick jungle, and being only 6,000 feet high is sometimes feverish and therefore objectionable as a station.' Official records show that in 1842 only four gentlemen (Mr. H. R. Dawson, Major-General Kennett, Major-General Wahab and Mr. Norris) owned houses there and that the first of these and a Captain Vallancey occupied between them 196 cawnies of 'coffee and mulberry plantations.'

The Coonoor ghát, however, rapidly began to oust all other routes up to the Nilgiris; and Coonoor, being at the head of this and possessing other intrinsic advantages, soon grew. Ouchterlony's survey report of 1847 [3] calls it a 'settlement' and speaks of residences of Europeans, an hotel (perhaps the present Glenview), a bazaar in the hollow below them and a masonry bridge (still in existence) over the stream down there. The European and Eurasian population, however, still numbered only nine persons and the adult natives only 283. Ouchterlony's map, printed in the second edition of Baikie's *Neilgherries*, distinguishes 'Old Coonoor,' the Badaga hamlet above referred to, from the present Coonoor. Burton's *Goa and the Blue Mountains*, which was also written in 1847, contains a rough sketch of the place, evidently taken from near the travellers' bungalow, which latter he describes as 'that long rambling thing perched on the hill above the little bazaar, and renowned for broken windows, fireless rooms and dirty, comfortless meals.' This sketch shows ten European houses; but, except that two of them are clearly Glenview and The Lodge, it is not easy to make out which others of the present houses these, the earliest residences in the station, represent. Burton mentions a

[1] M.J.L.S., iv, 241. [2] *Ibid.*, viii, 99.
[3] *Ibid.*, xv, 46–7.

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The second edition of Baikie's *Neilgherries*, published in 1857, says there were then 24 well built and well furnished houses in the station, besides the four detached bungalows which constituted the Glenview (then called Davidson's) hotel. In the garden of the latter grew (it is declared) oranges, peaches, nectarines, plums, apples and pears, 'all equal to any that Covent Garden exhibits' and 'a great variety of splendid flowers.' The Church, as has been seen, had also been built by then. The bazaar, however, was ill-supplied, and stores (and also servants, ponies and carriages) were best obtained from Ootacamund.

By 1866, when the place was first made a municipality, there were 42 bungalows in it and 263 native houses and shops. Coffee estates had now been opened all round it and had added to its importance. At the census of 1871 the total population numbered 3,058. Shortly afterwards the new ghát road from Méttupálaiyam was opened and became the highway to the Nilgiris, and the rapid growth of the town in the next 30 years is sufficiently indicated by the census figures given in the margin, though these, as has already been said, give only the cold-weather population.

1881	... 4,778
1891	... 6,049
1901	... 8,525

In 1883 the Mithorai and Kátéri Gold Mining Co. started work on land a little to the south of 'the milk village' on the old road to Ootacamund, but no payable quartz was ever found. The construction of the rack-railway up the ghát in 1899, its extension to Ootacamund which is now proceeding, and the great influx of labour and traffic occasioned by the establishment of the Cordite factory close by have in the last ten years quite altered the nature of the place. It is now so crowded that schemes for its extension to the west are under consideration; and in 1905 the deputy tahsildar (who was first appointed in 1860) was replaced by a tahsildar and the station was made the head-quarters of the European Head Assistant Collector.

Dénád: A village of 1,230 souls, almost all Siváchári Badagas, situated seven miles in a straight line east by north of Kótagiri. It was the first village on the plateau seen by the first European

visitors, who (see p. 107) came up by the path to it from Dannáyakankóttai, and its name appears in the records regarding the early expeditions to the hills under various curious forms, such as Dernaad and Dynaud. In those days it boasted a travellers' bungalow. It is now well known all over the eastern side of the hills for its fire-walking festival, which is only second in importance to the more elaborate ceremony at Mélúr referred to below, and differs from it in one or two points. Other similar festivals are also held at Jakkanéri and Nedugula. It takes place on the Monday following the February new moon, near the Jadayasvámi temple to the north-east of the village. Those who intend to walk through the fire arrive the night before and bathe the next morning. The fire is lighted by an Udaya (Wodeya), or Siváchári priest, who afterwards offers to it a cocoanut and some plantains, sprinkles a little holy water on it, burns camphor and incense, and then leads the procession through it. A dance by both sexes to Kóta music generally occupies the next afternoon.

As at Mélúr, this fire-walking appears to be primarily an agricultural festival, for no one will plough his fields before it has taken place and a Kurumba is fetched up to sow the first seeds.

Dimhatti: A hamlet of Kótagiri lying about a mile to the north of the parent village on a lower sheltered spur running nearly north and south. In a similar position on a parallel spur half a mile away stands the Badaga hamlet of Kannérimukka, and this latter is the place which was called Dimhutty by the earliest European visitors to the hills. It is of interest as being the first spot on the Nilgiris on which European dwellings were built and is constantly referred to in the books and records about the first settlements on the plateau.

The only trace of European occupation now remaining is a two-storeyed building standing in a field of korali just north of the Badaga hamlet. This now belongs to the Badagas there and is used as a potato and hay godown, but its present uses and dilapidation do not conceal the fact that it was once an excellent little dwelling. It contains four rooms, is well and substantially built of brick in mortar (few houses on the hills, even nowadays, aspire to more than brick in mud), is coated with fine chunam, has a terraced roof supported on strong teak beams, a neatly-finished wooden staircase, teak doors with brass hinges and ornamental plaster cornices running round the rooms. In front of it was once a verandah. The Badagas call it 'Sullivan's bungalow,' and it was apparently built by Mr. Sullivan, Collector of Coimbatore and the Nilgiris. That gentleman is shown by official records to have had a bungalow at Dimhatti in 1821 (which Sir Frederick

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Price thinks he must have built during his stay there in 1819) and a medical report on the hills written in June 1822 by Assistant Surgeon Orton says that the Collector's (Mr. Sullivan's) establishment was then 'placed' at Dimhatti; Hough's *Letters on the Neilgherries*, written in 1826 and already several times quoted, speaks of 'a very commodious bungalow' at this place and says that Johnstone, Mr. Sullivan's gardener at Ootacamund, informed him that 'he commenced gardening at Dimhutty,' which shows that Mr. Sullivan had at least a garden there; and Captain B. S. Ward's report on his survey of the hills, which was probably written about the end of 1822, says 'several bungalows have been built in different pleasant situations, as at Dimhutty, and here is a very good kitchen garden.' Ten years later this latter was described as 'one of the earliest, and still one of the best, kitchen gardens on the hills.' It may seem odd that Mr. Sullivan should have erected such a substantial and well-finished residence in such a spot at so early a date, but the way he subsequently launched out into an expensive residence and a big garden at Ootacamund shows that he was a gentleman of lavish ideas.

He moved to Ootacamund in 1822, apparently in April, and the Dimhatti house passed to the Church Missionary Society—how and when, the Society possesses no records to show. At some subsequent date it and five adjacent smaller bungalows (which had apparently been built by the C.M.S. and have now vanished) were purchased for nearly Rs. 5,000 by Mr. S. R. Lushington, the then Governor of Madras who had taken so much interest in the opening up of the Nilgiris. When the latter left India in 1832 he placed all six bungalows and the kitchen garden under the care of the Officer Commanding the Nilgiris and the Collector, with instructions that they should be made available, at a nominal charge sufficient to meet repairs, for people who were in need of a change to the hills but were deterred by the high rents demanded there.[1]

Sketches of Dimhatti and the bungalows appear both in Harkness' book on the Tódas published in 1832 and in the 1834 edition of Baikie's *Neilgherries*, and in the former the larger bungalow above described and its five smaller neighbours are very clearly indicated. The Committee appointed to report on the prospects of the hills as a sanitarium had suggested, just before Mr. Lushington's bequest was made, that Dimhatti should be

[1] His minute on the matter is printed in full on pp. 122–4 of Jervis' *Narrative of a Journey to the Falls of the Cauvery*, already several times cited.

constituted a separate sanitarium subordinate to Ootacamund. Dr. Baikie had reported very favourably on its climate[1] and it was conveniently placed at the head of the rough ghát from Sirumugai, near Méttupálaiyam, which had been constructed in 1820–23 by the Pioneers at Mr. Sullivan's suggestion. Government, however, reserved this proposal for further consideration and no action was ever taken. Ootacamund, in fact, by this time overshadowed all other stations; and the commencement, in 1830, of the first ghát to Coonoor left Dimhatti and Kótagiri off the main route to the hills.

For this and other reasons Mr. Lushington's benevolent scheme regarding the six bungalows bore little fruit. Surgeon De Burgh Birch, writing in 183?, refers to the bungalows and the terraced house, which he says were 'let at low prices to sick officers,' and states that near them then was 'a nice garden, and fine lawn-like piece of ground, bounded by a handsome wood adjoining.' But the bungalows apparently became less and less used; and about 1850 what remained of them was sold on Mr. Lushington's account to the well-known Parsi firm of Framjee & Co. of Ootacamund. In 1851, therefore, Government formally withdrew from any further connection with them. The five smaller bungalows had by that time tumbled down. Burton, who wrote in 1847, says[2] that even then 'the unhappy cottages, after having been made the subject of many a lengthy Rule and Regulation, have at last been suffered to sink into artistic masses of broken wall and torn thatch, and the larger bungalow now belongs to some Parsee firm established at Ootacamund.' He declares that the latter was built by Mr. Lushington himself, 'who spared no expense to make it comfortable, as the rafters which once belonged to Tippoo Sultan's palace testify,' but Burton was often more picturesque than accurate in his historical statements; Mr. Lushington's own minute says he bought all six bungalows from the C.M.S.; and he is not likely to have paid nearly Rs. 5,000 merely for five thatched cottages.

Framjee & Co. are shown by official records to have sold the two-storeyed bungalow to Captain Thomas Bromley of the Bombay Army, and Mrs. Bromley died there in 1852. She is buried at St. Stephen's, Ootacamund, and her epitaph calls the

[1] This report will be found in Jervis' book, pp. 117–21.

[2] *Goa and the Blue Mountains*, 358. Ouchterlony's survey report of 1847 also states that all but one of the bungalows were in ruins. He wrongly says that they were 'built long since by Government for the accommodation of invalids,' which shows how short official memory is apt to be.

Dimhatti bungalow 'her residence Summerland, near Kottigerry.' From Captain Bromley the house passed back again to Framjee & Co. (it is said they took it in payment of money owed them by him) and in June 1880 the administrators of P. N. Bottlewallah, at his death the sole partner in that firm, sold the bungalow and 5¼ acres of land to the Badagas who now own it. The kitchen garden, the 'fine lawn-like piece of ground' and the 'handsome wood adjoining' have now all been swept away; the remains of the house stand forlornly alone in a field of korali; and they are used, as has been said, as a store for potatoes and hay.

Hulikal Drug, usually known as 'the Drug,' is a precipitous bluff at the very end of the range which borders on the south the great ravine which runs up to Coonoor. It stands 6,000 feet above the sea just opposite Coonoor and in sight of it, is crowned by the ruins of an old fortress, and is a favourite picnic place. It is named from the neighbouring village of Hulikal, or 'Tiger's stone,' and the story goes that this latter is so called because in it a Badaga killed a notorious man-eater which had long been the terror of the countryside. The spot where the beast was buried is shown near the Pillaiyár temple to the south of Hulikal village and is marked by three stones. Burton says there used formerly to be a stone image of the slain tiger thereabouts.

The old fort stands on a precipitous site, three sides of which fall almost sheer down to the Coonoor ravine on the one hand and the Coimbatore plains on the other, while the fourth is connected with the rest of the range only by a narrow neck the last part of which will not admit more than one man at a time. The great natural strength of the position has been ingeniously increased by the manner in which defences have been built close along the edge of the precipices and strengthened by projections wherever the possibility of an escalade existed, and a high wall fitted with embrasures and loopholes has been erected to face the entrance from the narrow neck. The fort itself occupies the whole of the crest of the bluff, being about 500 yards long and varying from 100 to 200 yards in breadth. It is enclosed by a rough wall of stone in mud, which for the most part is five feet thick. Besides the main entrance facing the neck, there was originally a gateway opposite this leading straight down the steep side of the hill.

Captain Harkness, describing the place in 1832, says that in those days the walls of some large native houses were still standing within the fort; and that though much of it was overgrown with forest the trees were still young, showing that the place had been occupied within comparatively recent times. Almost the whole enclosure is now thickly covered with a tangle of jungle.

The view from it is magnificent. Even Burton, who as a rule has not a single good word for anything on the Nilgiris (he went up there on sick leave and perhaps his complaint was liver), appreciates its beauties. He says—

'The rock upon which we tread falls with an almost perpendicular drop of four thousand feet into the plains. From this eyrie we descry the houses of Coimbatore, the windings of the Bhawany, and the straight lines of road stretching like ribbons over the glaring yellow surface of the low land. A bluish mist clothes the distant hills of Malabar, dimly seen upon the horizon in front. Behind, on the far side of the mighty chasm, the white bungalows of Coonoor glitter through the green trees, or disappear behind the veil of fleecy vapour which floats along the sunny mountain tops. However hypercritically disposed, you can find no fault with this view; it has beauty, variety, and sublimity to recommend it.'

Who built the fort is not known. The Badagas usually call it Pakásurakóttai [1] and a legend among the people in the plains below quoted by Capt. Congreve,[2] says that it is so named because a demon called Pakásura or Bhakásura lived there in days gone by. He daily exacted from the villagers below a cart-load of provisions which, with its driver, he used to devour at a sitting, returning the cart to the plains with a kick to be used again next day. Bhíma, the strongest of the five famous Pándava brothers, happened one day to be near Méttupálaiyam and offered to take up the daily cart-load of food. Getting hungry on the way up, he devoured the provisions himself, but filled the cart with mud and took it on to the demon. The latter was furious and attacked Bhíma, who, after a tremendous strúggle, slew him. With his dying breath the demon pronounced a curse upon the people at the foot of the hills who had thus tricked him, declaring that they should thenceforth be a prey to the deadly fever from which they have suffered ever since.

The Badagas told Colonel Ouchterlony [3] that this fort, Malaikóta near Kalhatti and Udaiya Ráya fort in Kónakarai (the two latter of which are referred to below) were built by three of their chiefs, who divided the rule of the plateau among them. Another tradition says that Haidar Ali built Hulikal Drug and Malaikóta; but it seems more likely that he merely occupied and repaired them.

[1] This name is given in the maps to a slightly higher hill to the south-west. Another Badaga name for the Drug is Gaganachukkikóttai. Mr. Sewell's *Lists of Antiquities* (i, 229) erroneously enters these three names as though they belonged to three different places.

[2] M.J.L.S., xiv, 142. Variants of the legend are met with in other parts of the Presidency.

[3] See his survey report, M.J.L.S., xv, 81.

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He undoubtedly collected revenue on the plateau. The Badagas told Colonel Ouchterlony that his officers used to despoil whole villages of all their grain and force the ryots to carry their own plundered property down to Dannáyakankóttai (near the junction of the Bhaváni and the Moyár), which he had re-named Sharifábád and where he kept a strong force and a big magazine. Captain Harkness says that Haidar's son Tipu re-named Malaikóta Hussainábád, and kept there a garrison of 60 or 70 sepoys under a killadar named Saiyad Búdan which was relieved every two months from Dannáyakankóttai, and that he called Hulikal Drug Saiyadábád and had a garrison of 100 men there under a killadar named Ali Khán.

Another tradition avers that Tipu used Hulikal Drug as a place of confinement for prisoners of war, and in Colonel Meadows Taylor's novel *Tippoo Sultaun* the hero, Herbert Compton, is interned there for many months; spends long hours lying on the grass at the edge of the precipice watching the scene below him and thinking how his friends would marvel at the European flowers and climate of the place; tries to escape but, his guide having been killed on the way by a tiger, is unable to find his way alone through the thick jungle which separates him from any civilization; and is at length returned to his friends in a state of collapse from malaria contracted at the foot of the hills on his way down.

There is perhaps little truth in this tradition about prisoners of war, the two forts being more likely to have been kept up as outposts to overawe the hills and collect the revenue from them. This is the view of Captain B. S. Ward in his survey report on the hills, and he was a most painstaking enquirer and wrote in 1822, only twenty-three years after the death of Tipu at the taking of Seringapatam.

Kátéri is for revenue purposes a hamlet of the Athikárihatti mentioned above, but is now a populous and rising Badaga settlement. It lies just off the road which runs from the Half Way House on the Ootacamund-Coonoor road southwards to Kulakambai, and near the point where the Kéti stream meets the Kátéri river. Just below this junction the latter forms the well-known falls referred to on p. 8 and is there dammed up to make a reservoir for the water-power required (see p. 313) for the Cordite Factory at Aravankád. The dam bears a tablet showing that it was constructed in 1902.

Kengarai: A village of 1,650 people lying seven miles east by south of Kótagiri. Its hamlet of Halúru is the H'laiuru of Mr. Breeks' *Primitive Tribes and Monuments of the Nilagiris*, where

some good sculptured cromlechs, described and figured by him, exist. About a mile north of Kengarai, near the Hiriodiya temple and on the site of old Kengarai, is another well sculptured cromlech which has not apparently been noticed by him or any other writer on the subject.

A mile beyond the toll-gate on the Rookery ghát is a rock called the Tódawan párai, or 'Tóda's rock.' The story goes that a Tóda who was a headman of those parts oppressed his people so much that he was ultimately sent for to Dannáyakankóttai and sentenced to be hanged before the fort gate there, and that from this rock his wife pronounced a curse against the fort that it should become covered with prickly pear. The curse has certainly been fulfilled, for the prickly pear at Dannáyakankóttai is now so thick that it is necessary to cut one's way into the place. The Tóda woman's spirit will doubtless be pleased to hear, also, that the very site of the fort will probably eventually disappear under the water of one of the great Bhaváni reservoirs now contemplated.

Kéti (Kaiti): A village of 4,456 people, lying three miles in a straight line south-east of Ootacamund in the well-known valley of the same name, which is an open treeless expanse of red soil, covered with Badaga cultivation and scrub, along the north-western side of which run the railway and road from Coonoor to Ootacamund. The experimental farm which was started here in 1830 has already been referred to on p. 202 above. When it was closed by order of the Directors in 1836 and the greater part of the land belonging to it was returned to the Badagas, Government retained its buildings and the gardens immediately adjoining them. These were lent from 1836 to 1839, as a hot-weather residence, to General the Marquis do St. Simon, Governor of Pondicherry, who lived there for some time.

In 1840 Lord Elphinstone, then Governor of Madras, bought the property for Rs. 550[1] and also acquired, on a ninety-nine years' lease from the Badagas, some land round about it. He frequently resided there, preferring it to Ootacamund owing to its greater privacy and milder climate, and on the site of the old homestead he built an excellent house (the furnishing of which is stated in Baikie's book to have been planned by Count D'Orsay) and surrounded it with a beautiful garden.

In 1845 he sold the whole property to Mr. G. J. Casamajor, a Judge of the High Court who had just resigned the Civil Service,

[1] This figure and some of the facts below are taken from Sir Frederick Price's book already frequently cited.

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for Rs. 15,300. Mr. Casamajor laid out another Rs. 10,000 in alterations and lived there for some years. He spent much of his time in evangelistic and educational work among the Badagas, opening a school for them in the house and learning Canarese so that he might translate the Gospel into that language. He died there in May 1849 and is buried at St. Stephen's, Ootacamund. It is said [1] that at one time he had wished to be buried in the little wood by the house, through which led one of his favourite walks, but that he afterwards changed his mind because he was afraid that the Badagas, who were very devoted to him, might turn his grave into a place of worship. On his death it was found that he had bequeathed the greater part of his property to the Basĕl Mission, in which he had recently taken much interest and to which he had given the money which enabled it to start its first operations at Kótagiri. He had wished that the Kéti property should be sold and the interest on the money so realized be spent on the mission; but as no purchaser for it could be found it was turned into the head-quarters of the mission (which had already rented a house close by the Kátéri falls) and all its beautiful furniture and fittings were disposed of. It is still the mission's head-quarters on the Nilgiris, and in buildings round about it are a lower secondary school and a boys' orphanage.

Close by the mission's property was established, in March 1902, a camp for 1,000 Boer prisoners of war. The temporary buildings in this, which had mud walls and galvanized iron roofs, cost some 3¼ lakhs. The prisoners were allowed to walk about the ghát road and the Wellington bazaar, where their distinctive yellow *pagris* were a familiar sight, but were permitted to enter Ootacamund, Coonoor and Wellington itself only in special circumstances. They were repatriated in August 1902, and in October the buildings were dismantled and the saleable materials sold. The mud walls still remain to mark the site.

Kódanád: Six miles in a straight line north by east of Kótagiri; population 973. The name seems properly to be Kódinádu, or 'the end nád.' The country round about it differs charmingly from the rest of the east of the plateau, often consisting of grass land with scattered shólas, like that to the west of Ootacamund, instead of bare red soil and Badaga cultivation. The Kódanád tea estates, whose well known trade-mark is K.T.E., were started in 1864-66 by Mr. R. F. Phillips, who bought about 1,000 acres of land there, mostly covered with splendid forest

[1] Rev. G. Wieland's *Fifty years' work of the Basel Mission on the Nilgiris* (B.M. Press, Mangalore, 1896), 13.

which, to the disgust of local sportsmen, he proceeded to fell forthwith. The views from this corner of the plateau across the Moyár valley and away to the Satyamangalam hills on the east are some of the finest on the plateau.

Kónakarai: Lies $2\frac{1}{2}$ miles east-south-east of Kótagiri; population 1,278. Some two miles south-east of it, within the Tullochard estate, in a place known as *Kóttai-háda*, or 'the fort flat,' lie the remains of the old fort Udaiya Ráya Kóta referred to in the account of Hulikal Drug on p. 329. This has gone by several names: the popular pronunciation is Udriyakóta; Captain Harkness calls it 'Atra Cota;' Captain Congreve, 'Adi-Raer-Cottay' (and he founds an ingenious theory on this mis-spelling); and Mr. Grigg 'Udiaráya Kóta.' Except for a few mounds and hollows, a bit of stone-in-mud rampart and signs of gateways on the eastern and western sides, no trace of it now remains; but Harkness (1832) and Congreve (1847) have both given descriptions of it as it was in their time. The latter[1] says it is—

'Situated on a small table-land and sequestered by hills clothed with jungle. The position is strong, being nearly environed with a morass and stream running along the channel of a deep fissure in the ground. The remains of the fort indicate it was originally constructed of earth in some places, and in other parts of uncemented stones. In shape it is an oblong, the longer side measuring one hundred paces, the shorter fifty-three, and consisting of a double line of works one within the other, the space between the two occupying twenty-five paces in breadth. The remains of two square towers are visible adjoining the outer line, one seated on the west face and the other on the south; the gateway probably ran under the former.

Within the inner walls I found some remains of stone buildings, consisting of large blocks and flags unwrought, and two upon which the marks of the chisel were apparent . . . Fragments of ornamented pottery were dispersed around.'

One of the chiselled stones is still lying there and seems to have been used for pounding grain. Local accounts say that the materials of the fort were utilized by a former owner of the estate within which it stands for the construction of a bungalow and out-houses on his property, and were afterwards carted to Kótagiri and used in building the house in that station called 'Caberfeigh.'

Badaga tradition gives a fairly detailed account of Udaiya Ráya. It says he was a chief who collected the taxes for the Ummattúr Rájas referred to on p. 93 and that he had also a fort

[1] M.J.L.S., xiv. 121.

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at Kullanthorai, near Sirumugai, the remains of which are still to be seen. He married a woman of Netlingi, hamlet of Nedugula, named Muddu Gavuri, but she died by the wrath of the gods because she persuaded him to celebrate the annual fire-walking festival in front of the fort, instead of at the customary spot by the Mahálingasvámi temple about half a mile off, and after her death he moved to the Malaikóta near Kalhatti which is referred to below. Nelliálam tradition adds that he was an officer of the forefathers of the present Nelliálam Arasu. Round the Mahálingasvámi temple, it is said, was once a populous village named Gudiháda and paddy was raised in the adjoining flat. Cut on a group of boulders there, are some modern Canarese letters of which no sense can be made.[1]

Near the fort are the only kistvaens on the hills. They have been mentioned on p. 98. Before one of them (that on the Kónakatti hill) the Badagas of Jakkanéri annually sacrifice a buffalo calf. The actual killing is done by a Kurumba.

About two miles south-west of Kónakarai, in the hamlet of Tótanalli, are the so-called 'Caves of Belliki,' on the walls of which are certain scratches which Captain Congreve enlisted in support of his theories that Buddhists or Jains once held sway on the plateau. These 'Caves' are merely overhanging rocks; and the scratches (as may be seen from the photographs of them in plates LXXX to LXXXII of Breeks' book) are hardly of historical interest.

Kótagiri: Eighteen miles by road east of Ootacamund and twelve from Coonoor. Population 5,100, which makes it the third largest place in the district but includes the people of several outlying hamlets. The name is properly *Kótar-kéri*, or 'the street (or line) of Kótas'; old papers often spell it Kotargherry and there is still a Kóta settlement in the place. The tahsildar of Coonoor holds fortnightly sittings at the police-station to dispose of criminal cases arising in the neighbourhood. The place contains a station of the Basel Mission, a chattram, a dispensary, a market and a gorgeous new mosque constructed by the Palni Muhammadans who do most of the trade in it.

Kótagiri lies about 1,000 feet lower than Ootacamund (the Basel Mission chapel is 6,511 feet above the sea) and is protected by the Dodabetta range from the violence of the south-west monsoon. It consequently possesses the climatic advantages of Coonoor (already mentioned) with the added superiority that it

[1] Inaccurate transcripts of them appear in Congreve's paper (M.J.L.S., xiv, 141) and Breeks (plate XLIV A).

does not suffer from Coonoor's mists and is more bracing. It is, however, off the main route, and the journey up to it from Méttupálaiyam by its own ghát of twenty-one miles one in seventeen (which is usually performed in a rickshaw) is a long one. The station stands at the head of a fine ravine running down towards Méttupálaiyam and is scattered over a piece of steeply undulating country (almost bare of trees and thus in great contrast to Ootacamund and Coonoor) where almost all the European houses stand by themselves, each on a knoll of its own. Several of them command beautiful views down to the plains and the Lambton's Peak range in Coimbatore. The place boasts a hotel which is open in the hot months, but no travellers' bungalow.

It was at Dimhatti, just north of Kótagiri (see p. 325), that the first European visitors to the plateau settled; and it was to Dimhatti and Kótagiri that the first 'road' to the hills was made in 1820–23. Hough's *Letters on the Neilgherries*, written in 1826, says that several bungalows had then been built there (they were probably very temporary affairs) and describes in detail the journey up the ghát from Sirumugai. At Arivénu, the first village down the present ghát from Kótagiri, was then a rest-house which had once been a bungalow built for his own use by Lieutenant Evans Macpherson, the maker of the road of 1820 and the builder of 'Cluny Hall' at Ootacamund. By 1847, according to Ouchterlony's survey report, there were fifteen European houses in the place (the same number as in Coonoor) but latterly the comparative inaccessibility of the station has counteracted its climatic advantages; the decline of the coffee industry has hampered it; and it has grown but slowly. Plans for supplying it with a piped water-supply from the Longwood shóla at a cost of Rs. 40,000 have been elaborated but shelved for want of funds.

Apparently the oldest of the existing houses in Kótagiri is that which is now called 'The Avenue.' The site of this was originally granted to Mr. R. H. Clive, who was Head Assistant and Sub-Collector of Coimbatore from 1822 to 1827. In the latter year he went Home on leave and sold the place, which was then known as 'Clive's House,' to Colonel Hazlewood. In 1831 the latter disposed of it to General J. S. Fraser, who in 1856 sold it again to Lieutenant Fraser (no relation), a naval officer. In 1861, at which time it was called 'Hillwood,' it passed to Colonel Herbert Murray-Aynsley of the Madras Cavalry, who gave it its present name and sold it in 1871 to Captain John Craig of the Ordnance department. The latter gave it to its present proprietor, Mr. W. C. Johnston, in 1875.

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After 'The Avenue' the oldest house in the place is 'Kota Hall,' which stands in a beautiful situation looking down the ghát. This was built by Mr. James Thomas, who was Collector of Coimbatore between 1830 and 1832[1] and made a new but steep road to Kótagiri direct from Méttupálaiyam.[2] About the same time his brother, Mr. E. B. Thomas, who was Head Assistant and Sub-Collector of Coimbatore from 1830 to 1833, built the next house, Belmont, which in 1853 became the property of the Ouchterlony family. It was perhaps in one of these two houses that Sir Frederick Adam, then Governor of Madras, stayed in 1836. The *Hurkaru* of June 2nd in that year[3] remarked maliciously: 'Recent letters from the Neilgherries mention that Sir Frederick Adam is much broken in health and very much out of humour; that he resides a good deal in the most retired way at Kotagherry; takes no great exercise and transacts no great business.' In 1840 Bishop Spencer, then Bishop of Madras, bought Kota Hall, to which he made additions. In 1847 it passed to General J. T. Gibson of the Madras Army and after his death in 1851 to his son-in-law, Major Briggs. In 1855 it was let to Lord Dalhousie, who had been sent to the Nilgiris by his medical advisers and was accompanied by his daughter Lady Susan Ramsay. He was apparently there in April and again in August, September and October. He is popularly, but erroneously, supposed to have signed there the order for the annexation of Oudh. The same story is told of Walthamstow, the house he stayed in at Ootacamund. Lady Canning went to Kota Hall for a few days in May 1858 and one of her letters calls it 'the place Lord Dalhousie chiefly lived at, and liked most of all,' but says that by then 'the doing up expended by Lord Dalhousie is in decadence, though the house will do very well to live in for a week. The view is really beautiful.' In August and September 1858 Lord Harris, then Governor of Madras, stayed at Kota Hall for about a month to recoup from a sudden and severe illness contracted at Ootacamund; and in July 1862 Sir William Denison, another Governor, was there for a few days.

In this latter year the property was sold to General Cullen; in 1864 to Mr. (afterwards Sir William) Robinson (who added 28 acres to, and otherwise much improved, it); in 1868 to Mr. G. S. Forbes; in 1877 to Mr. Gordon W. Forbes; and afterwards

[1] The Government grant for the land (20 cawnies) was not made until 1838, but the house must have been built before that.

[2] Jervis, p. 134.

[3] See Asiatic Journal, xxi, 185.

in turn to Messrs. Stanes & Co. and the present owner, Colonel Hutchins, whose wife's sisters now occupy it.

Next to Kota Hall, the oldest house in Kótagiri is 'Corsley.' Captain Frederick Macleod bought the nucleus of the site in 1832 from the Kótas for Rs. 25 and obtained a Government grant for it in 1838. On this he built a large wooden house (said to have been made in Calicut and sent up in pieces) which was first called 'Angelica House' and subsequently 'The Ship,' 'Steep Hill' and 'Prospect Hill.' After changing hands several times, the property passed in 1873 to Colonel Vine, who sold it in 1880 to Mr. F. R. Griffith, who named it 'Corsley' and to whose family it still belongs. He planted in its grounds the wonderful collection of rare plants and trees which still thrives there, and added to it the property variously known as 'The Dove's Nest,' 'The Haunted House' and 'Tragedy Hall.' In this latter house died in 1848 Theodora Mary, daughter of Bishop Spencer and wife of Hatley Frere, C.S.,[1] and her tombstone, which bears only her initials and the date, is in the Kótagiri cemetery. No servants would afterwards stay in the house, which they declared was haunted, and it is now in ruins and overgrown with a wild tangle of jungle. The 1871 map of the district marks 'Metz Castle' as one of the chief houses in Kótagiri, but the building so called, in derision, was a little one-roomed construction near the bazaar which belonged to the Rev. F. Metz of the Basel Mission.

While General Gibson was at Kota Hall he began the construction, from his own money, of the little church called Christ Church. At his death in 1851 the walls were only a few feet high, but he had left funds for the work with his son-in-law Major Briggs, and the building was eventually completed therewith. He is buried just outside the Communion rails and a tablet to his memory is built into the wall. It is said[2] that he selected the unfortunate site which the church occupies (at the bottom of a deep hollow and far from most of the European houses) because he wished to be able to see it from the windows of Kota Hall. Far better sites (such as the hill above the Blue Mountain Hotel) were available. In 1864 Major (then General) Briggs made over the church to Government on the condition (among others) that it should never be consecrated, so that clergymen of all denominations could hold services in it. In the same year Government

[1] Mr. J. J. Cotton's *Inscriptions on Madras Tombs.*

[2] For this and some other particulars about Kótagiri I am indebted to Miss M. B. L. Cockburn, whose father, Mr. M. D. Cockburn, M.C.S., was the first European to settle permanently in the place.

presented it with a bell, and they have since kept it in repair. Proposals to build a new church on a more convenient site have recently (1906) been negatived.

The European cemetery lies at the other end of the station, on a spur overlooking Dimhatti. It is said that this odd and out-of-the-way site was fixed by the accident that in the very early days of the station an officer who had pitched his tents there died and was buried in front of them. Subsequent graves were placed alongside his, and the spot thus became the recognized cemetery. The earliest tombstone is dated 1822 and is to the memory of Mr. E. H. Cruttenden, Judge of Trichinopoly, to whom there is also a tablet in St. John's Church in that station. Other graves are those of Mr. M. D. Cockburn, M.C.S. (brother of Henry Cockburn, Lord Chief Justice of Edinburgh), who died in 1869, of his wife Catherine (after whom St. Catherine's Falls were named and who died in 1879) and of several members of their family.

Largely owing to them, Kótagiri was one of the earliest centres of coffee and tea-planting on the plateau. Mr. M. D. Cockburn and his brother-in-law Mr. Frank Lascelles put down coffee plants (obtained from Ceylon and Naduvattam) in the Kannavéhatti and Hardathorai estates in the forties of the last century, and Miss M. B. L. Cockburn introduced the first tea on Allports estate in 1863.

Kótagiri suffered slightly from the gold-mining mania of 1879–82, the Kótagiri Reefs Co. and two other companies opening up supposed lodes below Horashóla and in Naduhatti on the bridle-path to Coonoor. The undertakings were all failures.

In Jakkanéri, a hamlet to the south of Kótagiri, are the sculptured cromlechs alluded to on p. 99. Near them formerly stood, it is said, the villages of Doddúru and Jakkatakambai, now vanished. In the heart of the Banagudi shóla, not far from the 'Doddúru group' of cromlechs, is an odd little shrine to Karairáya, consisting of a ruined stone hut surrounded by a low wall within which is a tiny cromlech, some sacred water-worn stones and sundry little pottery images representing a tiger, a mounted man and some dogs. These keep in memory, it is said, a Badaga who was slain in combat with a tiger; and annually a festival is held at which new images are planted there, vows are paid, a Kurumba makes fire by friction and burns incense, throws sanctified water over the numerous goats brought up to be sacrificed to see if they will shiver in the manner always held necessary in sacrificial victims, and then slays, one after the other, those which have shown themselves duly qualified.

A fire-walking festival also takes place annually at the Jadayasvámi temple in Jakkanéri under the auspices of a Sivácbári Badaga. It seems to have originally had some connection with agricultural prospects, as a young bull is made to go partly across the fire-pit before the other devotees, and the owners of young cows which have had their first calves during the year take precedence of others in the ceremony and bring offerings of milk which are sprinkled over the burning embers.

Kulakambai (the termination *-kambai* denotes a Kurumba village) is for administrative purposes a hamlet of Mélúr, eight miles as the crow flies south-west of Coonoor. It is an important coffee centre, and midway between it and Mélúr, in the valley of the deserted Túdúr village mentioned above (p. 316), is the well-known Terramia tea estate. The falls and hill here have already been mentioned in Chapter I.

Mélúr, a village of 2,947 people, eight miles south-west of Coonoor, is widely known for its fire-walking festival, which is one of the most elaborate on all the plateau. It takes place on the Monday after the March new moon, just before the cultivation season begins, and is attended by Badagas from all over Mérkunád. The inhabitants of certain villages (six in number who are supposed to be the descendants of an early Badaga named Guruvajja, have first, however, to signify through their Gottukárs, or headmen, that the festival may take place; and the Gottukárs choose three, five, or seven men to walk through the fire. On the day appointed the fire is lit by certain Badaga priests and a Kurumba. The men chosen by the Gottukárs then bathe, adorn themselves with sandal, do obeisance to the Udayas of Udayarhatti near Kéti, who are specially invited over and feasted; pour into the adjacent stream milk from cows which have calved for the first time during the year; and, in the afternoon, throw more milk and some flowers from the Mahálingasvámi temple into the fire-pit and then walk across it. Earth is next thrown on the embers and they walk across twice more. A general feast closes the ceremony and next day the first ploughings are done, the Kurumba sowing the first seeds and the priests the next lot.

Finally a net is brought; the priest of the temple, standing over it, puts up prayers for a favourable agricultural season; two fowls are thrown into it and a pretence is made of spearing them; and then it is taken and put across some game path and some wild animal (a sambhar if possible) is driven into it, slain and divided among the villagers. This same custom of annually killing a sambhar is also observed, it may be here noted, at other

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villages on the plateau, and in 1883 and 1894 special orders were passed to permit of its being done during the close season.

Latterly disputes about precedence in the matter of walking through the fire at Mélúr have been carried as far as the civil courts, and the two factions celebrate the festival separately in alternate years.

Rangasvámi Peak: A conical peak 5,855 feet above the sea which stands prominently forth on the extreme eastern limit of the plateau and is a well-known landmark from the plains. It is the most sacred hill on all the plateau. Hindu legend says that the god Rangasvámi used to live at Karaimadai on the plains between Méttupálaiyam and Coimbatore, but quarrelled with his wife and so came and lived here alone. In proof of the story two footprints on the rock not far from Arakód village below the Peak are pointed out. This, however, is probably an invention designed to save the hill folk from the toilsome journey to Rangasvámi's car-festival at Karaimadai, which used once to be considered incumbent upon them. In some places the Badagas and Kótas have gone even further and established 'Rangasvámi Bettus' of their own, handy for their own particular villages.

On the real Rangasvámi Peak are two rude walled enclosures sacred to the god Ranga and his consort, and within these are votive offerings (chiefly iron lamps and the notched sticks used as weighing machines) and two stones to represent the deities. The hereditary pújári is an Irula, and on the day fixed by the Badagas for the annual feast, he arrives from his hamlet near Nandipuram, bathes in a pool below the summit, and marches to the top shouting 'Góvinda! Góvinda!' The cry is taken up with wild enthusiasm by all those present, and the whole crowd, which includes Badagas, Irulas and Kurumbas, surrounds the enclosures while the Irula priest invokes the deities by blowing his conch and beating his drum, and pours oblations over, and decorates with flowers, the two stones which represent them. That night two stone basins on the summit are filled with ghee and lighted, and the glare is visible for miles around. The ceremonies close with prayers for good rain and fruitfulness among the flocks and herds, a wild dance by the Irula, and the boiling (called *hongal*, the same word as *pongal* the Tamil agricultural feast) of much rice in milk. Ordinarily the Badagas do not boil milk, but drink it cold. About a mile from Arakód is an overhanging rock[1] called the *kodai-kal*, or 'umbrella stone,'

[1] There is no 'cave' as stated in the *Coimbatore District Manual*, ii, 427, and Mr. Sewell's informants misled him when they said (*Lists of Antiquities*, i, 216) that the 'temple' on the peak contained inscriptions.

under which is found a whitish clay. This clay is used by the Irulas for making the Vaishnava marks on their foreheads at this festival.

North by west of Rangasvámi's Peak is Rangasvámi's Pillar, an extraordinary isolated rock pillar which rises in solitary grandeur to a height of some 400 feet and has sheer sides which must be quite unclimbable.

Wellington: Is a cantonment about $1\frac{1}{2}$ miles north of Coonoor, situated near the road to Ootacamund on one of the numerous spurs of the Dodabetta range 6,100 feet above the sea. It contains 4,793 inhabitants. Its climate and general appearance resemble those of its neighbour Coonoor, but it does not get the latter's frequent mists. Though it was originally a bare spot, it has now been thickly planted with Australian and other exotic trees. It is the head-quarters of the Colonel on the Staff commanding the Southern Brigade of the Ninth (Secunderabad) Division, and also contains a Convalescent Dépôt and part of a British Infantry regiment. The station is in charge of the military authorities and possesses a Cantonment Magistrate.

One of the first things which struck the earliest European visitors to the hills was the desirability of quartering British regiments there, especially those newly arrived from Home, in order to obviate the large amount of sickness which usually resulted in them from residence on the plains during the hot weather. As early as 1832 Dr. Baikie brought the matter forcibly to the notice of the Medical Board.[1] In 1838 Dr. Birch [2] again referred to the matter and proposed that the troops should be cantoned away beyond Avalanche in what was then known as the Long Valley on the Sispára road. Luckily this suggestion was not adopted, as during the south-west monsoon no wetter and more bleak situation could probably be found on the plateau. At the end of 1839 Lord Elphinstone proposed that a regiment should be stationed at Ootacamund, but the Government of India would not have it.[3] The Marquis of Tweeddale, who became Governor in 1842, held views similar to those of Lord Elphinstone and suggested that a sum of £45,000, which the Government of India proposed to lay out on barracks at Trichinopoly, should be expended on similar accommodation on the Nilgiris. Major Ouchterlony, then engaged on the survey of the hills, pointed out to him the Wellington site, and in 1847 the

[1] His report printed on pp. 111 ff. of Jervis' book.

[2] M.J.L.S., viii, 89.

[3] A history of the proposal will be found in Sir F. Price's book.

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Government of India agreed to build temporary barracks there. Nothing however was actually done for several years. In those days, when there was no railway and transport animals could only be obtained from Mysore, Salem and Coimbatore, there were serious strategic objections to the location of troops on the hills; and it was also feared that the men would get malaria when marching up, especially through the feverish jungle on the Mysore side.

In 1849 plans for permanent, instead of temporary, barracks were at last drawn up and in 1850–51 a scheme for a Convalescent Dépôt was sanctioned by the Home authorities and work was begun. The station was at that time called Jakkatalla (or Jackatallah) from the Badaga village of that name to the north of it, and in 1852 Sir Richard Armstrong, then Commander-in-Chief, recommended that the name should be changed to Wellington, in honour of the Iron Duke, who from the first had evinced an interest in the establishment of a sanitarium on the Nilgiris, which he must have seen from afar in his youth, and had expressed his unqualified approbation of the scheme. Sir Henry Pottinger, the then Governor, thought the name would be unintelligible to the natives; but in 1860 Sir Charles Trevelyan held that 'this interesting military establishment could not be connected with a more appropriate name' than *Wellington*, and ordered it to be so called thenceforth. About the same time he proposed to the Secretary of State that Ootacamund should in future be called Victoria, but the suggestion seems to have met with no response.

The barracks were begun in 1852 and completed in 1860. Another block was added in 1876. The total cost, including all outbuildings, etc., was £167,000 and they contain accommodation for 54 non-commissioned officers and 820 men. They are substantial and of the best materials, and the water-supplies and sanitary and cooking arrangements are excellent. Besides the Convalescent Dépôt, they now accommodate a British Infantry battalion which supplies detachments to Calicut, Malappuram and Cannanore in the Malabar district. The native bazaar stands some distance away on the other bank of a stream which runs beside the Coonoor-Ootacamund road and is crossed by 'the Waterloo Bridge,' better known nowadays as 'the Black Bridge,' a tarred wooden construction.

Above the barracks are the officers' bungalows, conspicuous among them being the Commandant's on the top of the hill above 'the Fountain,' a point where half a dozen roads meet. Below

and west of this is a small lake, along the embankment of which runs a road to Coonoor, and east and south of it is a deep ravine, which separates Wellington from Coonoor, and at the bottom of which is the race-course.

The Waterloo Bridge, over which passes the road which runs from Wellington to join the Ootacamund-Coonoor road, was first built in 1858, but collapsed before completion on 26th November of that year owing to a combination of heavy rain and bad work. Acrimonious recriminations followed among the various officers responsible; and in the end the Executive Engineer was sent back to military duty. An iron girder bridge was next designed, but there were no funds; and in 1878 the present wooden construction was put up. In 1855, when the project of constructing a bridge there was first mooted, it was suggested that a high dam should be thrown across the stream and the road taken along the top of that. When the bridge collapsed Sir Charles Trevelyan revived this proposal, but the cost was prohibitive. The idea of forming a reservoir at this point has recently been revived in connection with the scheme for utilizing the water of this or other streams for the electrification of the Nilgiri railway.

The existing lake was made, it is said, by Lieutenant-Colonel Richards, the Joint Magistrate of Wellington, largely by the labour of convicts in the Jail there, about 1875.

The race-course was due to the energy of the same officer, and was chiefly made from public subscriptions. The stream which now runs along the western side of it formerly ran through the middle of the hollow in which it lies, and had to be diverted. The local Badagas say that the Tódas had a *ti* dairy there, and a funeral place near the barracks. Their mand, as has already been stated on page 324, was near the present Coonoor Club; and the Badagas had a village near the Commandant's house. The Tódas were moved to Bettumand near the Rallia reserve, and the Badagas to the neighbouring village of Banthumi; and compensation is still paid annually to both of them for their land. The race-course is extremely picturesque, wooded hills rising above three sides of it, but is so small that the turns make racing dangerous in wet weather. Meetings were regularly held there until 1905. They took place just before the May meeting at Ootacamund, so that the same horses could compete in both, and all Ootacamund used to go down to them. In 1905 the course was severely damaged by floods in the stream already

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mentioned, and this and other causes led to the abandonment of the meeting, which shows no signs of being revived.

The Anglican church at Wellington, St. George's, was built in 1886. It stands on a commanding site and will hold 400 persons. The question of erecting a place of worship in the cantonment was first raised as early as 1854, but as the plans for the barracks included two rooms for use for divine service and the Coonoor church had just been finished the matter was dropped. In 1863, in 1873, and again in 1882, the subject was revived—strong representations as to the unsuitability of an ordinary barrack room for public worship being made by the Chaplains—and at length in 1885 funds were found for the work. The building was designed by Major Morant, R.E., who had built the chancel at Coonoor and was now Consulting Architect to Government, and was finished in 1886. The estimate was Rs. 38,161, but the work cost Rs. 47,810 and there was trouble in consequence. The present bell came from St. Stephen's at Ootacamund. It was not required when the new tubular bells were put up there in 1894, and was transferred to this church, the existing bell in which was reported to be 'very small, very cracked, and giving a most insignificant sound which can scarcely be heard at the barracks.' The organ, which cost £400, was obtained in 1902 from public subscriptions.

The Roman Catholic church, St. Joseph's, was also designed by Major (then Colonel) Morant. The estimate (Rs. 30,526) was sanctioned in 1886 and the building was completed at a cost of Rs. 33,576 (including furniture) in 1888, the Roman Catholic Chaplain himself carrying out the work under the supervision of the Executive Engineer.

The Cantonment cemetery was opened in 1852 and enlarged in 1877. In 1854 and 1855 no less than 44 officers and men of the 74th Highlanders, a wing of which was then stationed at Wellington, were buried there; Baikie's *Neilgherries* (second edition, 1857) says that, with exceptions, these deaths were due to disease contracted before the regiment came up, but another account states that the men had been brought up to help in building the barracks and were quartered in unhealthy temporary huts, which had been hastily constructed for their accommodation and had no proper floors. Within the Cordite factory is a tombstone to nine men of the 33rd Regiment who died in 1876-77.

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Is the largest of the three Nilgiri taluks, and corresponds almost exactly with the old divisions of Tódanád and Kundahnád, thus occupying the northern, north-western and south-western portions of the plateau. In addition, it includes the tract at the northern foot of the plateau in the valley of the Moyár. Its exact limits may be gathered from the map at the end of this volume and statistics regarding it appear in the separate Appendix. The more interesting places in it are the following :—

Ánaikatti : A hamlet of Ebbanád situated in the jungle of the Moyár valley. The experiments in mule-breeding made there have been referred to on p. 29. The stream which flows past it tumbles over a pretty fall on the slopes of Bírmúkku (Bimaka) hill. The Badagas call the spot Kuduraihalla, or 'the ravine of the horse,' and say the name was given it because a Badaga—covered with shame at finding that his wife gave him first sort rice but his brother, who lived with them, only second sort—committed suicide by jumping his horse down the fall. The Badagas also say a chief named Kámaráya once lived at Ánaikatti and built an anicut, now washed away, across the stream, but he is a shadowy personality of whom little seems to be remembered.

Avalanche : A spot at the foot of the Kundahs (thirteen miles from Ootacamund by bridle-path and sixteen by the old Sispára road, which latter is practicable thus far for lightly-laden country carts) at which are a local fund travellers' bungalow, a chattram and the quarters of two forest guards. The bungalow is a favourite point for trips from Ootacamund and consists (see the separate Appendix) of a central room with fireplace, two bedrooms with bathrooms, a kitchen and a stable with four stalls, is in charge of a maty and is furnished with chairs, tables, cots, baths, cooking kit, crockery and cutlery. But visitors must bring their own bedding and, as there is no village at the place, every kind of supplies. The bungalow is visible from several points near Ooty, notably the hill above Porcupine Shóla and the upper part of the Havelock Road. It stands at the foot of a big shóla on the south side of a wide and beautiful valley, and looks across to the long line of Bettumand (*alias* Himigala) hill, up the wrinkles of which climb straggling shólas and which

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was known of old, from the numbers of ibex which haunted its cliffs, as Chamois Hill. This separates the Avalanche Valley from its northern neighbour the Emerald Valley. On the top of it is a thick bed of magnetic iron ore, running east and west.

Avalanche gets its name from a big landslip which occurred about 1824 on the eastern face of the steep rocky height south-west of the bungalow, which was known in consequence to the early residents on the plateau as Avalanche Hill but is called Kudikádu Hill in the maps. 'There was a constant fall of rain for eight days, with heaving rolling thunder; during all which time the winds were so tempestuous, and the country so enveloped in darkness, that none dared stir from their homes. When at length the weather cleared up, they discovered the tremendous havock that had been made; and that the Pavhk, overflowing its banks in every direction, was surcharged with the wrecks and fragments of the mountain's side.'[1] In 1833, when Baikie wrote his account of the Nilgiris, the great scar made in the hill-side by the slip was still fresh, and was plainly visible from Ootacamund, and Dr. Benza describes the slip in his account of the geology of the locality written in 1836; but since then Nature, with gentle hand, has so effectively healed the wound that all remembrance of it has almost been lost and the site of it is only revealed by the smaller size of the trees which have sprung up upon the fallen masses of earth. It comes into view as soon as one crosses the highest part of the grassy ridge which runs across the left front of the bungalow. It was evidently a well-known landmark in the early years of the last century, for Captain Murray, the officer in charge of the Pioneers who were cutting the Sispára ghát in 1832, dates his official letters[2] from 'Foot of the Avalanche' and 'Camp at the foot of Avalanche Hill.' Mr Grigg seems to have overlooked the passages above cited, for he says[3] that the landslip is apocryphal and that the name Avalanche is derived from the Canarese *aval-anché* or 'first post,' from the post-house formerly located there. Ouchterlony's survey report shows that the post did not go that way until about 1846.

In Baikie's time, 'towards the lower part of the valley, which is still encumbered with rocks, trunks of trees, masses of earth, etc., a chalybeate spring is found issuing from below the débris and mingling with the rivulet, to which it imparts an ochrey tinge.' This water was analysed by Drs. Baikie and Glen, and

[1] Harkness' book on the Tódas, 147.
[2] See Jervis' *Journey to the Falls of the Cauvery* (London, 1834), pp. 139, 141.
[3] *Nilgiri Manual*, 7 note.

the results were so favourable (the spring being 'much the strongest and purest yet examined') that they entertained the hope that it would prove 'highly useful in cases of debility of the digestive organs,' especially as it was situated in a sheltered valley possessing a climate far more equable than that of Ootacamund. Happily this idea of locating a second Carlsbad in this beautiful spot came to nothing, and the valley retains its ancient peace and is a favourite haunt of small and large game. All that is wanted to complete its attractions is some trout in the fine stream, plentifully fringed with the Nilgiri lily, which traverses it and tumbles over a little cascade of eleven steps in view of the bungalow. This is one of the feeders of the Kundah river and is usually called the Avalanche stream. A bridge was built over it in 1847 at the point where the road crosses it, but this was washed away and its place has been taken by a cradle, big enough to hold one person, which travels along a wire rope.

Pleasant expeditions from Avalanche are to 'McIvor's bund' (referred to on p. 352), four miles by bridle-path; up the pass to the top of the Kundahs (called 'Avalanche top') by the Sispára bridle-path, 2½ miles; and to the top of the big hill at the back (south) of the bungalow. The pass up which runs the Sispára path is one of the finest in all the Nilgiris. Early visitors to the hills waxed exceeding enthusiastic over its beauties. 'The view from all points of this ascent,' wrote Dr. Benza the geologist,[1] 'is really grand. I do not recollect having seen anywhere such a wild, yet magnificent, spectacle as the ravine formed by the two hills—the one of the Avalanche chain, the other one of the eastern range of the Kundahs. The thick impervious jungle, extending its whole length, occupies also the lower half of the steep declivity of both the hills, and is then succeeded by the usual carpet like covering of dense turf, which extends to the very pinnacles of their prodigious altitudes. . . . At every turn of the road a most striking and superb *coup d'oeil* presents itself—the nearly vertical side of the Avalanche hill, with its precipitous battlement-like summit--the enormous prismatic masses, three or four in number, bursting, as it were, through the turf-covered soil of the steep declivity of the hill; one of which, in particular, looks like a huge martello-tower stuck to the nearly vertical side of the mountain—while the magnificent ravine to the left completes the striking view before us. This assemblage of grand and wild objects cannot but produce sensations of wonder and admiration.'

[1] M.J.L.S., iv, 274.

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Dr. Benza might also have spared a few superlatives for the flowers along this ravine, the magnolias and rhododendrons in the jungles, and the balsams, orchis and blue gentians amid the grass.

From the top of the pass it is an easy walk eastwards, along the south side of the ravine, to the top of the big hill immediately above the bungalow. The same point can also be reached from the bungalow itself by going a hundred yards along the path to McIvor's bund and then turning sharp to the right up the steep grass slope above it. The view from this hill is one of the most comprehensive in all the plateau, for the panorama begins with Múkarti Peak on the north and embraces the Avalanche valley; Ootacamund and Dodabetta; the heights of Dévashóla and Coonoor (conspicuous by their blue gums); the Bhaváni valley, up which drift lazy clouds; beyond that the Lambton's Peak range and (on clear days) the Ánaimalais; Bellairambai, Mottakádu and Tai shólas, three of the biggest woodlands on the plateau, lying one behind the other; the Pálghát hills beyond them; close at hand, the sugar-loaf peak of Dérbetta or Bear hill; and last the quieter beauties of the undulating land which stretches away westwards to Sispára.

Dr. Benza preferred the scene obtained by clambering from the top of the pass to the summit of the Avalanche hill, up its southern side. 'The view from it,' he says, 'is the *non plus ultra* of this group; but the spot which struck me most was the awful recess to the north, intersected by deep ravines and abrupt escarpments, which join the Avalanche range to that of the Himigala. This wild scene is exceedingly striking, and I thought it the most romantic in the Nilgiris until I visited Múkarti.'

Billikal: A hamlet of Hulhatti situated about 1,000 feet below Ootacamund and some eight miles north of it by a steep bridle-path taking off from the Connemara Road. The place contains a bungalow now belonging to Khán Bahádur Háji Fakír Muhammad Sait of Ootacamund and a small artificial lake, and has long been a favourite spot for a trip from Ootacamund. Capt. Harkness, who wrote in 1832, says that even then a garden had been established there and was doing wonderfully well. Baikie (1833) speaks of Sir William Rumbold's 'little farm' there. The place stands on the edge of the plateau and Burton[1] says that one inducement to go there was 'the pleasure of contemplating the reeking flats of Mysore.' In those days the path down to Sigúr ran through it, but this was afterwards superseded by the present Sigúr ghát.

[1] *Goa and the Blue Mountains*, 332.

Apparently the bungalow was first built by Sir William Rumbold as a shooting-box; and it is said[1] that there was then a small natural pond close by and that this was afterwards enlarged in 1844 by Mr. Martelli, who then owned the property. Apparently this latter gentleman is identical with the 'Mr. Martin, an Italian,' who is described in the *Asiatic Journal*, xxxiv (1841), 103, as having settled at 'Betticull' and established a silk factory there. That journal said that he had already produced some good specimens of silk, and some of the white mulberry trees he planted for his worms are still in existence. Sir William Rumbold, it is said,[2] was the first to stock the pond (which is usually known now as the Billikal lake) with fish from the plains, and Mr. Martelli re-stocked it with fish obtained from the Sígúr river and from Barra, at the confluence of that stream with the Moyár. Mr. Sullivan also planted fruit trees round about.[3]

In Dr. Day's time (1866) the fish had greatly increased and some of the carp (*Puntius Carnaticus*) weighed 5 lb.[4] He transferred a few of them to Ootacamund. In his *Rod in India* Mr. H. S. Thomas says that in 1875 Mr. Thomas Kaye, then owner of the lake and bungalow, told him that the water was still full of big fish which rose to a fly and took butterflies thrown in to them, and the sound of whose splashing about could even be heard from the bungalow, two or three hundred yards away. They kept to the deep water and were unapproachable without a boat. Apparently nothing has been seen of them in recent years and the only sport at present is with the little *Rasbora*, which take a very small fly greedily.

On the top and the southern side of what is called the Billikal hill are several cairns which were dug into by Mr. Breeks in 1872. The finds, which included a gold ring, are described on pp. 83–84 of his book already often cited. Under a group of trees near Chinna Kunnúr, three miles east of Billikal, is a sculptured cromlech not mentioned in any of the books and two others without ornament. A number of others, also unnoticed hitherto, stand in ruins round a prominent big tree near the hamlet of Kavilorai to the south-south-west.

Kalhatti: A hamlet of Hulhatti situated three miles from the head of the Sígúr ghát and eight miles north of Ootacamund. A travellers' bungalow stands there (for the accommodation wherein

[1] Dr. Francis Day in Madras Quart. Journ. Med. Science, xii, 44. But his names and dates are not always accurate.

[2] *Ibid.*

[3] Mr. Grigg's Manual, 285.

[4] Dr. Day's paper cited, 77.

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ee the separate Appendix) facing which the Sígúr river comes down over a pretty fall 170 feet high into a deep pool. The place is a favourite spot for picnics from Ootacamund.

The experimental Government gardens which used to exist above the falls are referred to in Chapter IV.

About 1½ mile west of the bungalow are the ruins of the old fort of Malaikóta ('hill fort') which has been briefly referred to in the accounts of Hulikal Drug and Kónakarai above. Local tradition says that the place was the stronghold of a chief who was subordinate first to the Ummattúr Rájas and then to the kings of Mysore and who, when Tipu came into power and coveted the place, fled to Nelliálam in the Wynaad, where his descendants are still known as the Nelliálam Arasus, speak Canarese in the midst of a Malayálam country, ally themselves in marriage with the arasus (or ursus) of Ummattúr and are still applied to by the Badagas of the plateau for decisions on questions of importance. The hamlet of Bannimara, half a mile to the east, is still inhabited by Bédars who are said to be descendants of men from the Mysore country who were the old chief's servants.

Captain Harkness, as has already been mentioned, says that when Tipu Sultan occupied the fort to overawe the hill people and facilitate the collection of the revenue he changed its name to Hussainábád and placed in it a garrison of 60 or 70 sepoys, under a killadar named Saiyad Búdan, which was relieved every two months from Dannáyakankóttai. Mr. William Keys' report of 1812 mentions a tradition that Tipu even succeeded in getting a piece or two of artillery up to it.

The old fort stands in a most commanding position, but little now remains of it except its deep ditch. The interior is cultivated and the potatoes grown there are alleged to be unusually excellent. Harkness gives an interesting account of it as it appeared in his day, seventy-five years ago :—

'Its figure is that of an irregular square, the diameter of which does not exceed three hundred yards. The walls are built of rude stone, and of a reddish sort of earth, which seems to have formed a very good cement. Including the parapet, they rise to between twelve and fifteen feet above the surrounding level, and in several parts project out in the shape of semi towers; but the whole is now so completely overgrown with brambles and other brushwood that without much labour it is difficult to form a correct notion of its original shape. It is however surrounded by a dry ditch, fearfully deep in some parts and generally not less than sixty feet, with a breadth at the surface of about thirty but gradually decreasing towards the bottom. It has never had more than one entrance, of dimensions

sufficient to admit a horseman, and that by a passage leading through one of the semi towers, approached by a causeway little more than two feet wide and in one of the deepest parts of the ditch . . . . To the south-east of the fort are hills of much greater elevation, on which are the ruins of two watch towers. . . . To the left, as we approached the causeway, is a dilapidated temple dedicated to Basava.'

Worship in this last is still kept up, the hereditarypújári visiting it every Monday.

Masinigudi: Eighteen miles north-west of Ootacamund and six from the foot of the Sígúr ghát on the main road to Mysore. Population 1,291. It is situated in the low country in the Moyár valley amid much jungle, and is consequently very malarious. Contains a travellers' bungalow, police-station, post-office and chattram. It is the one village in the district which has been settled on the ryotwari system.

As has already been mentioned (p. 93), it was once called Masanahalli and was known to the earliest visitors to the hills as Déva-ráyapatna. Masini Amman is the village goddess, and her shrine still stands to the west of the village. The place and the neighbourhood were formerly of far greater importance than at present. South-west of it stand the remains of a mud fort; round about it are the reputed sites of several villages of which no trace now survives; near Tottalingi, in the Westbury estate, Aralatti two miles from Masinigudi, and Sembánattam on the left bank of the Sígúr river are signs of other old forts; and scores of cromlechs and 'hero stones,' many of them sculptured, abound around it. South of the Sembánattam fort is one (and by it a slab bearing a battered Canarese inscription); further south, in the reserved forest, are two more; in patta land, close by, is another; others stand in Gudi-kérimála, Góraikérimála and Málaipuram, deserted hamlets four miles east of Masinigudi; others in and around Masinigudi itself; and a whole series, some half buried, in the forest reserve two miles east of the Singáratótam estate, the bungalow on which property is partly floored with the slabs belonging to some of them. These cromlechs are generally of the usual kind, one slab only being sculptured and this containing at the top representations of a man and of the sun, moon, lingam and basava; in the second row standing figures of both sexes; and in the third and lowest the hero himself, armed with some weapon.

Two miles west of Masinigudi, in the hill called Karadigudda, is much iron ore, and tradition says that a century ago many smelters worked it. Hough's *Letters on the Neilgherries* states that the tract round the village was formerly highly cultivated, but was devastated in the campaign of 1790–91 with Tipu. The famine of

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1876–78 also pressed severely on this part. What was once a populous area is now a malarious jungle; and Masinigudi, once (apparently) the capital of the Wynaad, is little more than a collection of huts.

McIvor's Bund: Four miles east of the Avalanche bungalow the Kundah river runs in a deep channel between high hills, and there, near the point where the bridle-path from Nanjanád to Mélkundah crosses it, are the remains of the bund which Mr. W. G. McIvor, then Superintendent of the Government Cinchona Plantations, attempted to construct in 1868, and above them, surrounded by Australian trees, the ruins of the bungalow in which he lived while the work was in progress.

Mr. McIvor was a firm believer in the 'silting process' of making embankments, which consists in leading streams down to the site of the work, shovelling earth into them above the site, and leaving them to bring the silt down to the work and deposit it there exactly where it is wanted. So enthusiastic was he on the possibilities of this system, which had never been really tried in India, that he wrote an illustrated pamphlet onthe subject [1] and when he was at Home on leave in 1867 took pains to interest the Secretary of State and engineering experts in his views. Meanwhile Government had resolved to construct a road from Ootacamund to Mélkundah, where there was then a Government cinchona plantation, but found the Kundah river's deep valley a serious obstacle. Mr. McIvor then came forward with a proposal to throw across the river by the silting process a huge embankment no less than 700 feet high (!) which would not only form a vast reservoir for irrigation in the plains but would carry the road and so avoid the necessity of going down into the Kundah valley and up again the other side. The engineers threw cold water on the idea, but the Secretary of State ordered that the silting system should at least be given a trial under Mr. McIvor's supervision; and eventually in 1868 that gentleman undertook to make an embankment 140 feet high at the spot above referred to for the insignificant sum of Rs. 25,000.

Two stone culverts or tunnels, one above the other, traces of which exist to this day, were first of all made at the side of the river at a cost of Rs. 20,300 to carry off the ordinary and flood discharge of the river, and then neighbouring streams were led down to the site of the dam, to bring the silt thither, by channels which may still be seen on several of the adjoining hills. The

[1] *Our Mountain Ranges; How their resources may be turned into account*, Higginbotham, 1867.

river at that point was only 108 feet wide and the valley was only 700 feet wide at 150 feet above the level of the stream. Work went on satisfactorily at first, and the reservoir which was to be formed by it came to be known as St. Lawrence Lake; but in June 1869 a freshet topped the bund and swept practically the whole of it down stream. Government however sanctioned another Rs. 10,000 and operations were begun again.

On the 15th June 1870, when the embankment was 81 feet high, a storm began which lasted for four days. The river came down in a great flood and the water gradually crept up the bund in spite of the discharge through the two culverts and through escape channels cut in the side of the gorge. It formed at first 'a beautiful expanse of water, extending for many miles and winding in all directions among the mountains,' but on Sunday the 19th it topped the embankment and scoured out a breach which rapidly widened and deepened until it reached right down to the bed of the river. Contrary to expectation, the silt of which the bund was made formed a very compact mass of greasy moist clay which offered great resistance to the current, and portions of it remained even after the water had rushed continuously over it for a month.

Government were at first inclined to permit another attempt to complete the work, after first excavating a permanent flood-water escape through a saddle above the site; but this saddle was discovered to consist largely of rock; it was found that the cost of silting (which had been put at 400 cubic yards per rupee but in practice had worked out at only 17) had been greatly under-estimated; and the idea was abandoned.

Mélkundah ('upper Kundah') is a Badaga village of 272 inhabitants situated on the very edge of the southern side of the Kundahs overlooking the Bhaváni valley. Near it are the Tai Shóla and other coffee estates, and the bridle-path thither from Ootacamund crosses the Kundah river by a bridge built in 1885. The Government cinchona plantation which was started in 1863 in this remote spot and abandoned in 1871 is referred to on p. 184. It was opened with convict labour and is still known locally as 'the Jail Tote.'

South of the village is the sculptured cromlech referred to on p. 105 of Breeks' book, which is full of the water-worn stones called *déva-kotta-kallu.* Here, as in other spots, the Badagas have selected the neighbourhood of the cromlech as the supposed abode of their deified ancestors Hiriodiya and Ajji.

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Múkarti Peak: Perhaps the best known peak on the Nilgiris. It is 8,380 feet above the sea (very little lower than the two summits of the Avalanche hill to the south) and from Ootacamund, twelve miles to the west as the crow flies, is very noticeable owing to its curious shape, which is that of an acute-angled triangle with one side almost vertical.

The name by which it is generally known means in Canarese 'cut nose,' and sundry legends are related to account for it. One, quoted by Metz,[1] says that Rávana, the demon-king of Ceylon, furious at finding that the people of the plateau paid him less reverence than his enemy Ráma alias Rangasvámi, pronounced a curse upon them and threw into the air a handful of dust which turned into the two kinds of vermin with which their houses and persons are still infested. Ráma thereupon cut off Rávana's sister's nose in revenge, and stuck it up in the prominent position it still occupies as a permanent warning that he was not to be trifled with.[2] The other legend, given by Shortt,[3] avers that in days gone by when female infanticide prevailed among the Tódas the condemned babies used to be taken to this side of the hills to be put out of the way; and so no Tóda woman was allowed to approach it. One of them disobeyed the injunction and her nose was cut off as a punishment. It was however turned into this peak and she became a goddess. Neither story is convincing, but the hill people have not the knack of spinning improbably realistic fairy-tales which distinguishes their brethren of the plains. The peak, none the less, is known to every one of them, and Grigg says that 'from Múkarti to Molemava' (a fabulous tree on the eastern extremity of the hills) is the equivalent in Badaga ballads to our 'from Land's End to John o' Groat's', while the Tódas are supposed to believe that from its dizzy summit the souls of men and buffaloes leap together into the nether world.

The peak is seventeen miles from Ootacamund by the Governor's Shóla road and the Krúrmand bridle-path, and an easy path up its eastern face leads to the top. The view from thence is one of the finest in Southern India. Probably the most striking description of the locality extant is that of Dr. Benza, geologist and surgeon to Sir Frederick Adam.[4] He describes how he and a companion set out on foot towards 'the gorge at

[1] *The Tribes inhabiting the Neilgherry hills* (Madras, 1856), 65.

[2] The Rámáyana gives quite another story of the way in which Rávana's sister's nose came to be cut off.

[3] *Hill ranges of South India*, pt. 1, 9.

[4] M.J.L.S., iv, 288.

the foot of the south declivity of the highest peak' and then goes on—

'At last we came up to the gorge . . . . What a view! Who can describe in words the scenery which burst all at once on our sight! I doubt much whether even the pencil could give, not an adequate representation, but an approximation to it, of the terrific spectacle that came to view. To the south of where we stood the northern termination of the Kundahs rose in abrupt escarpments and vertical precipices, to the enormous height of 8,000 ft., excavated and furrowed by deep ravines. Sharp mural spurs project from their rugged abrupt façades, like so many props for the support of those gigantic walls; some of them, thousands of feet high, have not breadth proportionate to such an altitude; and they decrease, as they shoot upwards, to an oblong sharp edge, forming the summits of these wall-like escarpments. A sentiment of deep wonder must influence the beholder of such wild solitude and grandeur, rising majestically above the tame, monotonous plains of Malabar. I never saw such impressive mountain scenery before, Sispára's amphitheatre not excepted, which is too small, too tame and regular, to bear comparison with this.

Having admired this stupendous spectacle, we thought of scaling the peak. I must say a few words of this extraordinary excrescence, which shoots up from the very edge of an abrupt precipice, and raises its perpendicular façade above five hundred feet. On the very brink of the escarpment, which forms the western termination of the Múkarti range, this peak rises, suddenly, in the shape of a cone split into two equal parts from the apex to the base, one half having been hurled down to the plains of Malabar, the other stuck to the brim of the precipice, and having its split façade in a line with the escarpment, like a gigantic battlement . . . .

When half way up we sat down—my companion with his pencil to take a view of the romantic recess of the Kundahs, and I to gaze around me. Fearing giddiness, I did not attempt to walk to the brink of the precipice, but I crawled for the last twenty yards, and when near the Swamy which stands at the very pinnacle of the cone, I sat down; and after a few minutes' rest I crept on all fours to the brink, projecting my head only beyond the precipice.

How can pen describe the horrific confusion at the bottom of this awful abyss! Huge masses, portions of mountains I should say, lay scattered, or heaped up, in frightful disorder, at the foot of the parent mountain, which rises, like an enormous column, hiding its lofty summit in the clouds. I could not gaze at this frightful scene more than two or three minutes; and I retired creeping back to the Swamy, where we enjoyed again the sight of the recess of the Kundahs.'

The depth of the sheer drop which took the good Doctor's breath away has been grievously exaggerated. The first edition of Baikie's *Neilgherries* puts it at 5,000 feet, the second edition at

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6,000 feet, and Murray's *Guide*, not to be outdone, at 7,000 feet. Even in the Alps, there are no really sheer precipices of this altitude, and the drop is probably nearer 1,500 feet. The extraordinary steepness of the walls of this corner of the plateau can best be appreciated from the lower ground—say from the Nádgáni bungalow in the Wynaad.

Naduvattam (or Neddywuttum) is a village of 2,500 inhabitants standing on the western edge of the plateau, twenty miles from Ootacamund by the main road to Gúdalúr. It contains, in a hollow just off the road, a well-equipped travellers' bungalow, a post-office, a police-station and a few bazaars ; and within its limits are the Government cinchona plantations and factory already referred to on pp. 184–187. The bungalow of the Director of these stands further west on a site commanding a wonderful view over the Wynaad. The name of the village is supposed to be derived either from *nadu* 'centre' or *nídu* 'long' and *vattam* 'a valley,' and thus to mean either 'central valley' or 'long valley.' Neither etymology is borne out by the position of the place.

Nanjanád : Four miles as the crow flies south-west of Ootacamund. A Badaga village of 1,565 inhabitants built on one side of an open and treeless hollow of red soil known as the Nanjanád valley. It contains a well-known chattram standing beside the bridle-path to Avalanche which runs along the bottom of it.

Above this and to the south-west of it rises a wooded hill on the southern side of which are excavations which have led to some discussion. Captain Congreve[1] thought they were the remains of an entrenched camp and proceeded to compare them with ancient British encampments in England ; but since Mr. Brough Smyth, the mining expert employed by Government in 1879, found [2] numerous traces (much obliterated by subsequent cultivation) of ancient gold-workings on the quartz veins in this locality, it is at least equally possible that the excavations are nothing more than old mines. In the pretty Fairlawns ravine, just to the north-east, Mr. Brough Smyth found (see p. 12) other workings along the banks of the stream there, but Captain Congreve considered that the excavations (of which only the slenderest traces now survive) were the remains of a fortified position, of an altar, and of long rows of ruined walls forming streets which once formed the capital of the Tódas. In later years

[1] M.J.L.S., xiv, 104.

[2] P. 40 of his report of 1879.



Mr. Walhouse hazarded more guarded views of the matter.[1] The most obvious of the remains were the ruined walls, and they may have belonged to the huts of the gold-washers. Still further east, behind 'Bishopsdown,' is a valley which the Tódas cal. Púnthut, or 'the gold village,' which is another sign that gold was worked in the neighbourhood.

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Fairlawns, it may be noted, is so called from a strip of good turf there where formerly, according to the ungallant Burton,[2] 'during the fine season the votaries of Terpsichore display very fantastic toes indeed, particularly if they wear Neilgherry-made boots, between the hours of ten a.m. and five p.m.' In these degenerate days people do not care to dance in boots, on grass, through the hottest hours of the day; but Fairlawns is still a favourite place for picnics.

Ootacamund, head-quarters of the taluk and district and of the General commanding the Ninth Division, summer residence of the Madras Government, and the largest hill-station in Southern India, is a municipality of 18,596 inhabitants. It lies eleven miles by road from the present railway terminus at Coonoor in a valley (the bottom of which is 7,228 feet above the sea) which is surrounded on the south, east and north by the four hills called Elk Hill (8,090 feet), Dodabetta (8,640), Snowdon (8,299) and Club Hill (8,030), but is open to the west. Part of the bottom of this valley (see the map attached) has been levelled to form the public recreation ground known as the Hobart Park, and the adjoining lower portion of it is occupied by a lake, about a mile and a half long and of irregular shape, made by damming up the stream which runs through it. The main bazaar overlooks the Hobart Park; and in Kándal, a separate valley further north, is another large collection of native houses. The European houses and offices are on higher ground on the numerous spurs which run down in every direction from the enclosing hills, and for the most part are hidden away among thick plantations of Australian and other trees, notably blue gums (*Eucalyptus*) and acacias (*A. melanoxylon* and *dealbata*).

The history of the founding of the place is sketched in Chapter II, some account of the mission churches in it is given in Chapter III, the roads to it are mentioned in Chapter VII, its hospital and schools in Chapters IX and X, its jail and courts in Chapter XIII and the doings of its municipality in Chapter XIV. All that need now be referred to are the more important of its

[1] *Indian Antiquary*, iv, 161. [2] *Goa and the Blue Mountains*, 299, 333.

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remaining buildings and institutions. Regarding these and many other matters (among them the much-discussed question of the etymology of the name Ootacamund) a mine of information is provided by Sir Frederick Price's forthcoming work;[1] and the following few lines consist chiefly of facts purloined therefrom. For fuller particulars the reader should consult Sir Frederick's far more detailed accounts.

The Government Offices on Stonehouse hill occupy the site, and include part, of Stonehouse, the first house which was built at Ootacamund. This was constructed (of stone, whence its name) in 1822–23 by the Mr. John Sullivan who has so frequently been mentioned already. To the east of it he laid out an excellent garden, which he placed under the care of a European gardener. From 1827 to 1834 the house was let to Government and was utilized as quarters for officers in bad health; from 1847 to 1855 it was a school; from 1860 to 1869 the male branch of the Lawrence Asylum was located in it; and it first became the Government office in 1870. Between 1875 and 1877 the place was greatly enlarged and the existing council chamber and clock-tower were built (the clock being put up in 1883) and in 1882–84, 1899 and 1905 further considerable improvements were made. The saluting battery just below it was built in 1889–90 and the separate house for the Press in 1904. The old oak near the entrance stands within what was formerly Mr. Sullivan's garden, and very probably he planted it. No other trace of the garden survives.

Government House, which stands just above the Botanical Gardens already referred to in Chapter IV, was begun in 1877, when the Duke of Buckingham was Governor. Up to 1876 there had been no regular residence for His Excellency, and late in that year two houses called Upper and Lower Norwood (the former of which is now used as the Private Secretary's quarters) and also Garden Cottage, now the residence of the Surgeon to the Governor, were acquired for that purpose and added to and altered. It became clear however that the two bungalows could never provide suitable or sufficient accommodation, and in 1877 the present Government House was begun. It was first occupied in 1879, but was not really completed for some four years more. The eventual capital cost, including furniture, was about Rs. 7,80,000. The ballroom was added by Sir Arthur Havelock in 1900 and cost Rs. 60,000, and the main building and outhouses were provided with electric light in 1904 for about the same sum.

[1] *Ootacamund; a history*, Government Press, Madras, 1908.

The Army Head Quarters Offices began life as Bombay Castle *alias* 'Framjee's shop,' the place of business of a Parsi firm of general dealers well known for many years in Ootacamund. After the death of the last surviving partner in this firm, the property was sold in 1882 to Government for Rs. 70,000 and the buildings were converted into the present offices (which were first occupied in 1884) and re-named Mount Stuart after the then Governor, the late Sir (then Mr.) Mountstuart Grant Duff. In 1889–90 and 1892 the front of the building was renewed and other improvements were carried out at a cost of Rs. 37,000.

The foundation stone of St. Stephen's Church was laid on the 23rd April 1829 (the then King's birthday) by Mr. Stephen Rumbold Lushington, the then Governor, and work on the superstructure was begun in the January following. The big beams and other timbers for it were brought from Tipu Sultan's Lál Bágh palace at Seringapatam, which had been demolished. The pillars are of teak, coated with plaster and pointed to imitate stone. The building was consecrated on the 5th December 1830 by Bishop Turner of Calcutta, who happened to be visiting this part of his charge at that time. He preached from the appropriate text 'The wilderness and the solitary place shall be glad for them, and the desert shall rejoice and blossom as the rose.' The church was doubtless called St. Stephen's out of compliment to Mr. Stephen Lushington, who had taken immense interest in it from the first. Though orders had been given that the cost was not to exceed Rs. 8,000, the expenditure up to 1831 was Rs. 24,000, all of which was borne by Government. The Directors were horrified, and the Archdeacon, who had nothing to do with the matter, was called upon to explain and eventually, in 1835, was censured for 'indifference to the public interests' and 'neglect of duty.'

A barrel organ was provided in 1841; in 1851 the gallery, a clock and a bell were added—all three from private subscriptions; in 1857 a porch was built and the compound improved; in 1864 a better organ was put in; in 1877 Mrs. W. G. McIvor gave a new chancel in memory of her late husband and the present organ was procured at a cost of about £450; and in 1894 the peal of tubular bells was put up from subscriptions.

The church and the pretty cemetery round it contain many tombstones of interest. The earliest in the church (1830) is that of Harriet Elizabeth, wife of Sir William Rumbold, *Bart.*, the builder of the Club referred to on p. 361. The oldest in the churchyard is to the memory of Major W. M. Robertson, who died in 1825 and was buried in the little cemetery near Stonehouse which

CHAP. XV. OOTACAMUND. was then in use; but this stone was not actually erected until 1838. Other graves worth mention are those of the Rev. William Sawyer (1832), the first Chaplain of Ootacamund, who was appointed in 1831; General William Staveley, Commander-in-Chief of the Madras Army, who died at Tippakádu in 1854 (it is said[1] of heart disease, in a transit); Sir Henry Davison, Chief Justice of Madras (1860), to whom Thackeray affectionately dedicated *The Virginians*; Colonel John Ouchterlony, R.E., whose Survey Report of 1847 on these hills has so often been quoted in these pages (1863); Caroline Elizabeth, mother of Sir Arthur Havelock, Governor of Madras from 1895 to 1900 (1866); and James Wilkinson Breeks, first Commissioner of the Nilgiris, in memory of whom the Breeks' school was started (1872).

The foundation stone of St. Thomas' Church, on the borders of the lake, was laid on 1st May 1867. The building was constructed in compliance with fervent local representations (which had begun so far back as 1853) that St. Stephen's was too small for the growing congregation, could not be enlarged without difficulty, and was a long way from many of the houses in the station. It was apparently named out of compliment to Bishop Thomas Dealtry, who had taken the deepest interest in it and to whose memory the west window was afterwards raised by his widow. It was completed in 1870 at an outlay of Rs. 63,000 (of which Rs. 8,700 was the net cost of the site) and Government contributed about half of the amount. It was consecrated in the same year by the Bishop of Calcutta (the Right Rev. Robert Milman) and opened for public worship (as a chapel of ease to St. Stephen's, under the same Lay Trustees) in April 1871. Government gave the present bell in 1878.

The cemetery at St. Stephen's was closed in 1881, and burials now take place at St. Thomas'. Among the graves there are those of William Patrick Adam, Governor of Madras, to whose memory the fountain which formerly stood in front of the Collector's office and is now at Charing Cross was erected (1881); Sir Frank Souter, Commissioner of Police, Bombay (1888); Captain Preston, who was drowned in the Krúrmand river when out with Ootacamund Hounds (of which he was at one time Master) and to whose memory an obelisk stands at the place where the accident occurred (1893); Lady Bliss, wife of Sir Henry Bliss, K.C.I.E., Member of Council (1898); and James Grose, C.I.E., Member of Council with him, also in 1898.

[1] Mr. J. J. Cotton's *Inscriptions on Madras tombs*.

The Library began as an appendage to one of the local museums which were established in various districts in 1855 as feeders to the Madras Museum; and was at first quartered in a rented building. In 1858 the idea of forming a regular public library first found expression and it was favoured by the authorities. In 1861 the museum, which had always been an insignificant affair, was abolished, and the Government grant of Rs. 100 a month which had been made to it and the library together was continued to the latter, which by this time was located in a house near the existing building which had been purchased from public subscriptions. In 1864 Government presented the institution with a number of books which the amalgamation of the Haileybury College and India House libraries had rendered available. In 1867 the foundation stone of the main portion of the existing building was laid with much ceremony by the then Chief Secretary, Mr. A. J. Arbuthnot. The site, which had formerly been occupied by the travellers' bungalow, had been presented by Government. At that time the institution possessed 4,000 volumes, 180 subscribers and a monthly income from subscriptions of Rs. 575. The building cost over Rs 30,000 and was opened in 1869. In 1875 Government withdrew its monthly grant; in 1878 the Library was registered as an Association under Act XXI of 1860; and an additional 'Silent Room,' in which there was to be no talking, a room above it and a ladies' cloak room were added in 1899 at a cost, including furniture, of Rs. 9,700. In 1904 the Silent Room was refurnished, provided with a fireplace and turned into a comfortable sitting-room; the room above it was set apart in its place for those who desired absolute quiet; and other changes designed to render the institution more popular were agreed to and set in train.

The house occupied by the Club was built in 1831–32, at a cost of between £12,000 and £15,000, as a hotel by Sir William Rumbold, *Bart.* (a grandson of the Sir Thomas Rumbold who was Governor of Madras in 1778–80 and was created a baronet after Pondicherry capitulated to Sir Hector Munro in 1778) who with his younger brother had joined the great banking firm of William Palmer & Co. of Hyderabad, which at that time practically financed the Nizam. The building operations were superintended by one Felix Joachim (then Sir William's butler), who made enough out of them to construct the neighbouring house, Hauteville, on his own account. The place was opened as a hotel in 1833 and in the same year Sir William Rumbold died at Hyderabad and was buried there. In 1834 the house was

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rented by the Governor-General, Lord W. Bentinck, for Rs. 1,200 a month; in 1835-36 was leased by the then Governor of Madras, Sir F. Adam; afterwards again became either a hotel or a private residence; and in 1841 was sold to the originators of the Ootacamund Club. Dr. Baikie was the first permanent Secretary of this. The line of bedrooms to the east of the main building was added in 1863 at a cost of Rs. 16,000 and the two-storeyed chambers east again of these in 1898 at an outlay of Rs. 22,800. In 1881 the then dining-room was turned into the present billiard-room and the then card and reading rooms were made into the present dining-room. The new card-room was built in 1899 at a cost of Rs. 7,400 and the separate annexe for ladies in 1904 at an outlay of Rs. 21,000.

The first beginning of the present Gymkhana Club was the 'Neilgherry Archery Club' started in 1869 by Mr. Breeks, then Commissioner on the hills. This grew into the A.B.C. (Archery, Badminton and Croquet) Club which in 1875 put up the building on the Hobart Park, just below the brewery, which is now called 'the old pavilion.' In 1882 the Gymkhana Club, which at the time represented little but the racing and polo interests, was formed, and in 1892 the A.B.C. Club was amalgamated therewith and all the amusements thus came under the control of one body. In 1896 the Gymkhana Club was registered as a *limited liability* company; and in 1898 the present pavilion or race-stand was completed at a cost of Rs. 27,000. The land on which it stands is the property of Government and is leased to the Club on certain stated conditions.

The ground in front of it—now used as a race-course, polo and cricket-ground and golf links—was until recently part of the lake. This lake was made in 1823-25, and was due to the initiative of Mr. Sullivan, the then Collector. It originally ran back even a little beyond the road which now goes from the market towards Bombay House at the top end of the race-course (hereabouts was a likely spot for snipe) and it was crossed in the middle by the Willow Bund—built in 1831 and so called because its edges are fringed with Indian willows—which provided a short cut between the two sides of the station. It was originally suggested that the water of the lake should be utilized for irrigation down at Sigúr, at the bottom of the ghát, or even used for supplementing the supply in the Moyár and the Cauvery, but in 1830 Government definitely declined to consider any such project. The bund of the lake breached in 1830, developed leaks in 1846 which were only stopped with much trouble,

and breached again in 1852 to such an extent that the lake ran quite dry. CHAP. XV. OOTACAMUND.

Very soon after the construction of the lake the upper part of it began rapidly to shallow, owing to the deposit of silt by the stream which filled it, and became an unpleasant quagmire. Attempts to fill in a swamp there were made in 1868 in a desultory fashion, but nothing systematic was done until the end of 1893, when fascines were thrown across the supply stream to assist the deposit of silt and the amount of this silt was increased by cutting away the sides of the main and feeder streams. Two years of these operations resulted in very little, and at the end of 1895 Government sanctioned a lakh of rupees for filling in the lake with earth cut from the higher ground around it. Labour proved difficult to get, and in 1897 the 4th (now 64th) Pioneers were brought up to carry out the work. The ultimate cost was over two lakhs, and for this sum the whole of the lake above the Willow Bund was filled in, levelled and turfed, the new road at the back of the Gymkhana pavilion was formed and the tennis courts there were made. The pipe drains subsequently (1903) put down between the Willow Bund and the old pavilion cost another Rs. 28,000. The Hobart Park is now one of the most beautiful recreation grounds in India and the biggest in any hill-station there. The race-course round it has a lap of a mile and a quarter.

Sispára : Now an utterly deserted spot at the extreme south-western corner of the plateau. But when 'the Sispára road' from Ootacamund to the foot of the gháts below this corner was being made in 1832, and afterwards so long as it was still in use, this place was well known and much frequented, as it was a halting-point on what was then the main route from Calicut to Ootacamund. It stands just below a strikingly sheer cliff of rock at an elevation estimated to be 5,600 feet above the sea, and as it was the camp of the Pioneers who made the road it was at one time called Murraypet, after the Captain W. Murray who was in charge of the detachment. A sketch of it which forms the frontispiece to the second edition of Baikie's *Neilgherries* shows that in 1857 a tiled bungalow stood there. Dr. Benza, whose enthusiastic description of Múkarti Peak has been quoted above, was also greatly struck with the scenery round Sispára. He says [1] the view from the summit of the range, above where the bungalow was afterwards built—

[1] M.J.L.S., iv, 281.

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'Is really magnificent, particularly that of the gigantic amphitheatre to the right, the termination of the Kundahs on this side. . . . . The extraordinary chasm called the Devil's Gap is situated nearly in the centre of this semicircle . . . . The lower part of this chasm is nearly level with the road, which passes close to it. The rocks forming its walls are inaccessible, and it is therefore difficult to say what is the width of the gap; but it may be about a hundred yards . . . . From the outside of the pillars forming it we see, jutting down towards the Malabar, two sharp ridges like balustrades to huge stairs leading to this gigantic doorway. . . . Perhaps the most picturesque view is that of the hills of Malliallum [Malabar]; . . . the red clouds hovering above and the blue firmament surrounding them form a scene of grandeur worthy of the pencil of Claude de Lorraine.'

He appends a sketch of the Devil's Gap 'from the original in oils by Captain Barron.'

Later on a chattram was built beside the travellers' bungalow at Sispára alongside the road. Both are now in ruins, but for many years after they had tumbled down and the road which once led by them had become all but impassable from the jungle which had overgrown it they were still shown on the maps; and a gruesome story is told of a traveller who attempted in consequence to get to Ootacamund from the west coast by this route. One of his two followers quickly succumbed to exposure to the driving rain and bitter cold of the monsoon; and with the other he set out up the ghát. The second servant collapsed soon afterwards; but the traveller took him on his back and struggled on, buoyed up with the hope of assistance and food when he reached the bungalow at the top. When he did at length arrive there, the only sign of the bungalow was its crumbling ruins, and the nearest human being was at Avalanche, miles further on. He managed to reach that place, still carrying his servant, but the latter had died on the way.

Túnéri: Six miles as the crow flies north-east of Ootacamund on a commanding position overlooking Mysore. Is a thriving Badaga village of 1,248 inhabitants, which is supposed to be one of the oldest settlements of that caste on the plateau and now contains a station and church of the Basel Mission. In its hamlet Anikorai is the only 'snake-stone' on the Nilgiris. It is perhaps ten feet long and one foot wide and all the villagers can say about it is that one fine day a snake there was suddenly turned to stone.

GÚDALÚR TALUK.

GÚDALÚR taluk consists of the Ouchterlony Valley separately referred to below and of the three amsams (or parishes) of Chérankód, Munanád and Nambalakód, which are collectively known as the Nilgiri (or South-east) Wynaad to distinguish them from the Malabar Wynaad further west and were transferred to the Nilgiris only in 1877, previous to which they formed part of Malabar district. CHAP. XV. GÚDALÚR.

The history of the Wynaad and the derivation of its name have been given in Chapter II. It has already (p. 6) been explained that in all its physical aspects this tract differs totally from the Nilgiris proper. It is 4,000 feet lower and therefore hotter, and it gets a far heavier rainfall; consequently its flora and fauna are quite unlike those of the plateau, its forests being almost interminable sub-tropical jungle in which grow trees and plants unknown on the higher levels (a really beautiful garden could be formed of its wild flowers alone) and its animal, bird and insect life (not forgetting its leeches) being more in evidence and more varied. It is in short a botanist's Paradise and a naturalist's El Dorado. Moreover its crops are those of the low country, flourishing rice and ragi taking the place of the scanty korali and sámai of the plateau; its people are different, Malayálam-speaking Chettis and Paniyans cultivating its fields instead of Badagas and Kótas; the houses are mostly walled with plaited bamboo and roofed with thatch with a sprawling vegetable marrow atop, instead of being built of mud and red tiles; and the land tenures are those of Malabar, with all the complications arising from the existence of janmam right, and so (see pp. 278–282) the revenue settlement in force differs altogether from that on the Nilgiris proper. The Wynaad has seen more stirring times, too. Hundreds of acres of it have been wrested from the jungle and turned into the coffee estates and gold mines whose melancholy fate has been sketched on pp. 13–19 above; but nearly all this land has now gone back to jungle again. Its indigenous cultivators are so listless that to stop further retrogression (the population is now only 75 to the square mile) it was suggested in 1894 that Badagas from the plateau (though they are far from being model agriculturists) should be encouraged to migrate thither and bring its waste knolls and swamps under cultivation. But the Badagas

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have the greatest dread of the Wynaad fever and nothing would induce them to go there. The suggestion of 1894 was magnified *more Indico* into a bazaar rumour that Badagas were to be ordered to go down; and one of them voiced the feelings of his caste-fellows when he wrote anxiously to the Collector: 'I have heard that Badagas are to be sent down to Wynaad. I do not know why. Although our throats be cut or we be shot we will not go (with prostrations). I beg and pray. The Badagas are in fear at this rumour. We cannot stand Wynaad. The fever is terrible. We shall die in one day if we go there. We want to die here on the hills.' Beautiful, therefore, as it is, and interesting as are its wild life and its many trees and flowers, its air of having seen better days makes the Wynaad rather a melancholy tract.

Chérambádi: Twenty-three miles from Gúdalúr on the great road to Vayitri, in the extreme western corner of the taluk. Contains a travellers' bungalow, a police-station, a post-office and the chief market of the Chéránkód amsam. It was once a great planting centre, and is now the one and only place along the whole of this southern side of the taluk where any planting survives, a tea estate and factory being there. Mica has also been mined (see p. 13) on a small scale.

Dévála: Ten miles from Gúdalúr on the road to Chérambádi and Vayitri, and four beyond the head of the Karkúr ghát leading down to Malabar. During the gold-boom of 1879–82 (see pp. 13–19) it was an important mining centre and boasted an A.B.C. Club which held race-meetings and organized 'Canterbury Weeks,' a European population of over 300 (including many ladies), a post and telegraph office, a hotel and a hospital (two miles away on the road to Nelliálam), while the hills round about it were studded with the bungalows of the European employés of the gold companies. It was styled 'the rising capital of South-east Wynaad', and Professor Eastwick went as far so to identify it with the Biblical 'land of Havílah, where there is gold.' It has now dwindled to a hamlet of 495 inhabitants, but still contains a post-office, police-station, chattram and travellers' bungalow.

The natives sometimes call the place Déválakóttai, and say that the fort implied by this name existed just above the chattram and belonged to a chief of the Veddas, who were the people who sunk all the scores of gold-mining shafts which still make the neighbouring jungles unsafe places for a walk. A legend

relates[1] that once the Kurumbranád Rája came up from the Wynaad with many soldiers to seize the gold which the Vedda chief and his people had accumulated, and that the latter, being better at mining than fighting, put all their treasure in great copper pots and sunk it in the tanks near their various forts. One of these tanks was the little sheet of water now called the Shúlikulam which lies by the side of the road about half way between Dévála and the top of the Karkúr ghát; and another was in a hollow immediately east of the bungalow of Woodbriar estate near Nellakóttai, which stands on the site of a Vedda fort formerly called Manankóttai or Manerakóttai.

The Kurumbranád Rája, says the story, killed nearly all the Vedda people, but a few of them ran away and are still to be found in Mysore and the Nilambúr forests in Malabar. The Rája then gave the country to the Válunnavar (also spelt 'Warnaver' and 'Várnavar') of Nambalakód and went away. About a hundred years ago the Válunnavar tried to get the gold out of the Shúlikulam. He did much púja; all the people were feasted for three days; a great tamasha was made. Then the Válunnavar got elephants and chains, and the chains were fastened to the great copper pot at the bottom of the tank. The elephants were beaten, all the people shouted and cried out, the priests prayed, and the top of the great pot appeared above the water. Then suddenly two chains slipped, the pot fell back, and nothing was left but the copper cover. A fearful storm of wind and rain began, the people fled to their homes, and on that night the Válunnavar's son and most of the people engaged in the undertaking died. The copper cover was kept for a long time at Déválakóttai and was afterwards taken to the Nambalakód temple, where it is declared to have been seen by many people who were alive as late as thirty years ago. But no one has again dared to tamper with the Shúlikulam, for it is believed that whoever attempts to recover the gold will surely be killed.

Perhaps this legend possesses some foundation of truth. It is at least widely believed. The lease of Woodbriar estate granted by the present janmi, the Nilambúr Tirumulpád, contains a stipulation that any treasure found in the tank there shall be handed over to the janmi; and the Tirumulpád refused an offer made by 'one of the most acute and farsighted Englishmen in the Wynaad' for the right to search for the gold in the Shúlikulam. The tradition that the old mining shafts were made by a vanished people called the Veddas is also most persistent, and is constantly recurring in various connexions.

[1] Mr. Brough Smyth's report on the Wynaad gold mines, 14.

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Gúdalúr: The head-quarters of the taluk; lies thirty miles by road from Ootacamund and contains the building (erected in 1866 at a cost of Rs. 20,500 and added to in 1885 at an outlay of Rs. 6,660) in which the deputy tahsildar (who is also a district munsif) and the sheristadar-magistrate (who is also a sub-registrar) hold their offices; a D.P.W. rest-house and a local fund travellers' bungalow; Protestant and Roman Catholic churches and cemeteries; a hospital, a police-station, a post and telegraph office and 2,558 inhabitants. The name is said to mean 'junction village' because the place is built at the junction of the three roads from Mysore, Ootacamund, and Sultan's Battery in the Malabar Wynaad respectively. The public offices and a few of the houses stand in Bandipet and Kókál, near this junction, but the better and more fashionable part of the village is built a mile away up the ghát to the hills, and recent epidemics of plague in the lower quarter (where also the water-supply is wretched) have emphasized the preference for the higher site.

Every Sunday a market is held in Gúdalúr. As elsewhere in the Wynaad, Máppillas from Malabar are the chief traders thereat. It is not so important as it was in the days when the Wynaad flourished, but it still supplies the Ouchterlony Valley and the estates which survive. The Wynaad does not grow nearly enough grain for its own consumption and long strings of carts full of ragi come in weekly from Mysore territory. Numbers of these go on up the ghát to Naduvattam and Ootacamund, for though this is a roundabout route from Mysore it is preferred by the cartmen owing to the excessive gradients on the shorter road via the Sígúr ghát.

The Protestant church was designed by Colonel Morant, R.E., the architect of St. George's at Wellington and the chancel of All Saints', Coonoor, and was consecrated by the Bishop of Madras in 1889. The Protestant cemetery was partly consecrated by him in that year and partly in 1880.

Mudumalai: A small village of 629 people which gives its name to the well-known Mudumalai forest. In Mandavakarai, a neighbouring hamlet, is an enormous tree, probably the biggest in all the Wynaad, under which lives a god called Bommadan or Bommaráyan who is worshipped by the Chettis. Less than a mile south of it is a paved spot on which stand a lingam and two Siva's bulls, and at Hulisakal[1] is a small Siva shrine of cut stone.

[1] Apparently the 'Hulikal' of Sewell's *Lists of Antiquities*, i, 225. The Hanumán there mentioned is not to be found. The Siva shrine must be the Bráhmanical temple Mr. Sewell places under Mudumalai. The 'temple with inscriptions' at 'Chikkanálu' which he mentions cannot be traced.

Such things are uncommon in the Wynaad and are evidence that the place was formerly more thickly populated than now.

Nambalakód: About $5\frac{1}{2}$ miles north-west of Gúdalúr and the chief place in the amsam of the same name. Its temple to Bétaráyasvámi (or Bétakarasvámi) is of some local repute. The old fort from which it gets its name is now overgrown with lantana. It was formerly the residence of the Válunnavar referred to in the account of Dévála on p. 367.

Official papers say that at one time the whole amsam belonged to certain 'Malarayens' who, being unable to defend themselves from devastating bands of free-booters, sought the protection of the Kurumbranád Rája, who at last agreed to send his son Válunnavar to rule over them on consideration of receiving seven granaries as his private property. About 1826 the place was held by one Kelukutti Válunnavar, who (if not actually half-witted, as was freely alleged) was so unfitted for his position that he fell into great financial straits. Certain land alleged to be his janmam property was sold in 1836 by order of the Wynaad district munsif and this afterwards passed to the Nilambúr Tirumulpád. The next year the Tirumulpád obtained an assignment of all the rest of the Válunnavar's property, but the deed did not convey any janmam right. Kelukutti died in 1844 leaving only a sister named Subudra and her son. They were living at the time at Muttil, near Gúdalúr, on the charity of the frequenters of the temple, and there is much evidence to show that, like her brother, she was of unsound mind. The Tirumulpád however soon afterwards induced her and her son to move to Nilambúr, where the latter died in 1845. In 1853 the Tirumulpád obtained from Subudra a deed making over her janmam rights in Nambalakód amsam. She died in 1872. At the enquiry held in 1884-85 into escheats in the Wynaad, Government after much discussion decided not to call in question the Tirumulpád's claim to janmam rights throughout the amsam. The Mudumalai forest had been previously (in 1863) leased from him for 99 years.

Nellakóttai: Ten miles north-west of Gúdalúr on the road to Sultan's Battery. Contains a police-station (two rooms of which are used as a travellers' bungalow) and a post and telegraph office.

This and the Ouchterlony Valley are the only two places in the taluk where planting still flourishes, several coffee estates being in existence round about here, and a big tea estate and factory at Dévarshóla, three miles nearer Gúdalúr. The legend regarding the tank in the fort which once stood on the site of the Woodbriar estate bungalow has already been referred to in the account of

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Déväla. This fort occupied a most commanding site; the terraces cut in the hill-side for it are still visible; parts of its old walls, built of red bricks much larger than those used nowadays, still stand behind the bungalow; and round about are fragments of sculptured stone which evidently belonged to temples. The tank is now buried several feet deep in silt which has washed down from the hill above it. Local accounts say that Tipu also made an effort to obtain the treasure supposed to be buried in it.

Across the ravine to the west, the top of the ridge above the Marámatti estate has evidently also been terraced for some fortification or other.

Nelliálam: About eight miles north-west of Dévála as the crow flies. It is the residence of the Nelliálam Arasu (Urs), who has been recognized as the janmi of a considerable area in the Munanád amsam, but is in reality a Canarese-speaking Lingáyat of Canarese extraction, who follows the ordinary Hindu law of inheritance and is not a native of the Wynaad or of Malabar. Family tradition, though now somewhat misty, says that in the beginning two brothers named Sadásiva Rája Urs and Bhujanga Rája Urs moved (at some date and for some reason not stated) from Ummattúr (in the present Chámarájnagar taluk of Mysore) and settled at Malaikóta, the old fort near Kalhatti referred to on p. 350 above. Their family deities were *Bhujangésvara* and Ummattúr Urakátti, which are still worshipped as such. They brought with them a following of Bédars and Badagas, and thereafter always encouraged the immigration to the hills of more Canarese people. The village of Bannimara, a mile west of Kalhatti, is still peopled by Bédars who are said to be descendants of people of that caste who came with the two brothers; and to this day when the Badagas of the plateau have disputes of difficulty they are said to go down to Nelliálam with presents (*kánikai*) in their hands and ask the Arasu to settle their differences, while at the time of their periodical ceremonies to the memory of their ancestors (manavalai, see p. 134) they send a deputation to Nelliálam to invite representatives of the Arasu to be present. The Arasu in more recent times persuaded some Dévánga weavers to move to the Wynaad from Mysore, and they are now settled about two miles south-east of Nelliálam. They are the only people in this taluk who are weavers by caste, but they are now all cultivators by occupation.

The commandant of the forces of the two Urs brothers, continues tradition, was named Rudrayya (? Udaiya Ráya) and built the fort now known as Udaiya Ráya Kóta near Kónakarai

referred to on p. 333 above. When at Malaikóta, Bhujanga Rája Urs was one day invited by the then Náyar chief of Nelliálam to help him against his brother, who had turned him out. Bhujanga did so with success; so much so that he took Nelliálam for his own and drove out the whole of the Náyar family. The brother who had called him in cursed the family, it is said, and declared that thenceforth it should always be on the brink of extinction; and it is a curious fact that in recent generations the father has several times died when his only son was still quite a child.

Tipu Sultan's troops are said to have attacked both Malaikóta and Nelliálam, and the mutilation of the images in the Vishnu temples at the latter place and at Ponnáni (a mile to the east) is attributed to them. The then chief, another Sadásiva Rája Urs, is said to have submitted to them and helped them in an attack upon Nambalakód. When Tipu's men withdrew, the chief of Nambalakód fell upon Nelliálam in revenge, and the then Arasu was so hard pressed that he hurriedly despatched his pregnant wife and her handmaidens into the surrounding jungle and then, to avoid capture, committed suicide in front of the gate of his fort, which was afterwards plundered by the men of Nambalakód. Such is the family tradition. It should however be mentioned that other accounts state that the family fled from Mysore State as late as the time of Tipu and settled in Nelliálam under the permission of the Pychy rebel referred to in Chapter II.

In later years the history of the family becomes clearer, and it is evident that it owes its present position entirely to the action of Government officials. In 1858 Mr. (afterwards Sir William) Robinson, then Collector of Malabar, obtained leave to take the property under the Court of Wards, since the last Arasu, who was the adhigári (village headman) of Munanád and had died in 1856, had left only a mother of defective intellect and an infant son named Linga Rája Arasu. The whole value of the estate was then put at only Rs. 20,000. About 1863 land in Wynaad began to be of value for coffee estates; and, since the Collector had for some reason assumed that much of Munanád amsam was the janmam property of this family, the minor Arasu's income rose greatly. In 1868 he was sent to the Provincial School at Calicut, though previously a tutor on Rs. 4 a month had been considered sufficient. He attained his majority in 1871, but as the Collector considered that 'the boy's state of mental backwardness amounts to an infirmity sufficient to warrant his being still considered an

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incapacitated proprietor,' the estate remained under the Court until 1874, when it was handed over to the Arasu.[1]

This Linga Rája Arasu committed suicide in 1887 on the death of his younger wife in childbirth, and the Court of Wards again assumed charge of the estate on behalf of his minor son, Bhujanga Rája Arasu. The latter died in 1890 when only three years of age and his father's sister's sons, Mrigéndra Rája Arasu (*alias* Bettiah) and Puttiah, became the heirs to the property. Litigation followed, and the Collector was appointed Receiver of the estate. In December 1894, as the result of compromise decrees, the property was handed over to Mrigéndra Rája Arasu, subject to the life-interest in one half of it of Bavuramayya, Linga Rája's first wife. He died in 1896 and his son, Chandrasékhara Rája Arasu, who was born in 1894, succeeded him. He was educated in Mysore, and Linga Rája's widow, Bavuramayya, managed the estate as joint owner and his guardian. He died in 1907 and Bavuramayya is the present proprietor.

Nothing remains of the old fort of Nelliálam except traces of its ditch. It is said to have been levelled for growing coffee in 1874 by Mr. Adolphus Wright. Just south of the village is a flat-topped hill called Chátur Kóttai Dinnai which from the steepness of its sides is almost inaccessible except on the east, and on this are said to have been built two fortified granaries. Traces of the buildings and the defences may still be made out.

Ouchterlony Valley: As is mentioned on p. 2, this valley lies in a deep recess under the high western wall of the plateau. It is a well-known and important centre of coffee and tea growing and comprises nearly forty square miles (of which over 7,000 acres are planted up) and contains a population of 5,265 persons.

The boundaries of it will appear from the map in the pocket at the end of this volume. On the east its limit is practically the escarpment of the plateau; but on the south and north the valley is geographically a continuation of the Malabar district and the Nambalakód amsam respectively, and its boundaries on those sides were at one time bones of much contention. The Tirumulpád of Nilambúr claimed that the Nambalakód amsam, the janmam rights in which (he alleged) had been transferred to him by the Nambalakód Válunnavar's family (see p. 369), included the Ouchterlony Valley and also the land on the plateau as far east as the Paikára river. On part of this land near Naduvattam Government were at that period preparing to open their existing cinchona

[1] A fuller account of the matter will be found in the records of the enquiry into Wynaad escheats in 1884.

plantations, and for this and other reasons they altogether declined to accept the Tirumulpád's contention. Mr. Herbert Richardson, Deputy Collector of the Wynaad, in 1863 held an enquiry and laid down a boundary between Nambalakód, Malabar, the plateau and the Ouchterlony Valley which came to be known as 'Richardson's line.' Briefly, this started from the Paikára river, went westwards to a rock called Aráta Pára, thence to the Pándi river, down that to the crest of the gháts, and back to Nilgiri peak. In a suit between Government and the Tirumulpád in the District Court of Calicut in 1868 about the land at Naduvattam (which Government won) this line was an important piece of evidence.

Government were at first disposed to disallow the Tirumulpád's claim to janmam rights in the Ouchterlony Valley, which lay beyond and south-east of this line, respecting, none the less, any titles obtained *boná fide* from him, in ignorance of the rights of the case, by planters. But eventually, after some years' discussion,[1] they decided in 1878 to abandon all claim to janmabhógam in the Valley, and in 1888[2] they admitted the Tirumulpád's janmam rights there, Richardson's line being confirmed as the boundary thereof.

The Valley formed part of Malabar up to 1873, when it was transferred to the Nilgiri district. Its revenue settlement was made in 1889 (see p. 282) on the principles already followed in the case of the Nilgiri Wynaad.

The Valley is named after Mr. James Ouchterlony, a brother of the Col. John Ouchterlony, R.E., who made the 1847 survey of the district and whose report has often been quoted above. James Ouchterlony was at one time a Judge of the Principal Sadr Amin's Court established at Ootacamund in 1855, and the story goes that the possibilities of the Valley were pointed out to him in 1845 by his brother, who had been greatly struck with a sight of it which he had obtained from the top of the Gúdalúr Malai at its north-western corner. The whole of it was then an unbroken sheet of forest; and its sheltered position, elevation (from 4,000 to 4,500 feet above the sea on an average), considerable rainfall (80 to 90 inches), rich soil and numerous streams have resulted in its fully realizing the expectations formed of it, the coffee grown there still realizing the best prices of any in the Nilgiris.

[1] Details of which will be found in the history of the valley in the Settlement Report printed in G.O., No. 78, Revenue, dated 27th January 1890.

[2] Revenue G.Os., Nos. 174, dated 15th February 1887, and 206, dated 12th March 1888.

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The Valley is now such a ditsinctive and important tract tha some account of its history will not be out of place. On the 18th December 1845 James Ouchterlony obtained from the Nilambúr Tirumulpád a lease of the eastern half of it (within certain specified boundaries) for the very small sum of Rs. 1,500 down and an annual rental of Rs. 20; and the first coffee was planted in what is now the Lauriston estate, in a 'field' which is still as flourishing as ever. A planter from Jamaica named Wright supplied the technical knowledge necessary, and Mr. Ouchterlony also obtained an experienced partner in Mr. A. C. Campbell, who had been a large indigo-planter (and well known pig-sticker) in Bengal and whose family still holds a share in the Guynd estate. He was popularly known as 'Coffee Campbell.' On the 19th January 1857 Mr. Ouchterlony obtained a second lease for another block (also within certain specified boundaries) to the west of the first on payment of an annual janmabhógam of Rs. 2,000. This latter deed however expressly excluded '600 cawnies' of ill-defined land granted to Captain T. H. Godfrey of the Bombay Army, first by two Chettis on payment of Rs. 600, and subsequently by the Tirumulpád (who asserted a superior title to it) on payment of a janmabhógam of Rs. 15.

This grant had already occasioned disputes. Mr. Ouchterlony discovered that Captain Godfrey had trespassed on part of the land included in his first lease, and compelled him to vacate it; and when he obtained the second lease he entered upon a long course of opposition to, and litigation with, his adversary in the civil, criminal and revenue courts, concerning which amusing stories are told and which was still unfinished at the time of his death, which took place on the last day of the year 1875. A compromise was then effected between his executors and trustees and Captain Godfrey, which was at length embodied in a deed dated 7th July 1877. This recognized Captain Godfrey as the lessee of the 600 cawnies, which had already been parcelled out into eight estates, and also of 3,000 acres in the north-west corner of the Valley, out of which four more properties were afterwards made. The whole of these properties were eventually disposed of to third parties.

Meanwhile the remainder of the Valley had flourished greatly. The preliminary difficulties were immense, for though it is clear that in some remote past the Valley had been inhabited (the stone bull now in the temple near Hope estate and another broken one were found among its jungles, and when the foundations of the bungalow on the Helen estate were being dug, clay images of

goats, etc., were disinterred)[1] yet when James Ouchterlony first came to the Valley it was uninhabited. As he himself wrote in 1860—

'There was no resident population within any accessible distance; no articles of food to be had near the spot; we had no roads (properly so called), no police, and no law save at courts too distant to be reached. Labour and food had, in fact, to be imported from a remote district, the first being only obtained with difficulty, and then often scared away by the solitariness of the spot and an undefined dread of evil in the minds of the coolies.'

The labour was imported from Mysore, and so was the grain to support it. A dépôt for the latter was built at Gundlupet in Mysore and a huge store for it was constructed in the Valley itself, whither it was brought painfully by Brinjáris on pack-bullocks along the rough track which was then the only route between Gúdalúr and Mysore, and which was infested by Kurumba dacoits and wild elephants. Equal difficulty occurred in getting the crop, when it was picked, down to the coast. Elephants and camels had on one occasion to be requisitioned.

Elephants (and other big game) were then very plentiful in the Valley. It is said that Captain Godfrey made much of the money required for opening up his properties from the rewards he obtained for shooting them; the paths on the Sandy Hills estate are mostly mere improvements of the tracks the animals had made there (elephants, as is well known, have a wonderful eye for the best trace up a hill-side); and a cow was once shot from the verandah of the bungalow on the Hope estate, the vernacular name for which property is still Ánaikádu, or 'the elephant jungle.' Elephants still come up the valley of the Pándi river to the lower parts of the Ouchterlony Valley in smaller numbers, and in 1892 one was shot by Mr. J. H. Wapshare in the abandoned Montrose estate and one fell into an old elephant-pit near the Umballimalai estate which the Kurumbas had covered over in the hope of catching sambhar. Bison and spotted deer used also to be common, but the opening up of the Seaforth estate in the lower part of the Valley cut off their only path from the Malabar jungles and they are now rarely seen.

Those were the palmy days of planting and the numerous Europeans (about 20 in all) who were then employed on the estates had (or made) ample leisure for shooting and other relaxations. Once a year they used all to spend a week at the

[1] The fort and stone with curious marks referred to in Sewell's *Lists* (i, 225) as existing near Kussuru (apparently the Cusroo estate) cannot be found.

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house built by Mr. Ouchterlony at the top of the Valley (known from its materials as 'the tin bungalow') and in sheds built near at hand, where they held a series of gymkhanas. Traces of the race-course are still visible.

After James Ouchterlony's death, however, the property fell on evil days. The trustees for it were his two sons, James William and Gordon Alexander, and the late Mr. H. Wapshare, his son-in-law, who lies buried in the Valley. The two former fell out and went to law (the causes of the dispute are immaterial to the present account) and money which might have been spent on the maintenance and development of the estates went in legal costs. Mr. Wapshare, who was managing trustee, resigned; the High Court appointed an Official Receiver who drew a large salary, had a bungalow built for his special accommodation, but only visited the Valley two or three times a year; and things went from bad to worse until 1890, when Mr. Wapshare was appointed manager again by the High Court. The two Ouchterlony brothers had died meanwhile. Mr. Wapshare died in 1900 and his son Mr. J. H. Wapshare, who has kindly supplied much of the material for this account of the property, was appointed managing trustee.

Vigorous retrenchments of expenses were then and subsequently made, the European staff being reduced to four and the annual cost of supervision, management and working cut down from about five lakhs to about three. The Ouchterlony Trust is now out of difficulties. Five-sixteenths of it is still in court and the three beneficiaries of the remaining eleven-sixteenths (less certain estates which are held jointly with other proprietors) are Mr. James Ouchterlony's two daughters (Mrs. Johnson and Mrs. Wapshare) and the widow of his son Colonel Edward Ouchterlony, R.H.A. The crop in 1905 was as much as 650 tons of coffee and 140,000 lb. of tea, in growing and picking which 2,000 coolies were employed. Ceará, castilloa and pará rubber are also being tried in certain estates. The Trust has its own tea factory in the Valley and its own coffee-curing works at Mamalli on the Beypore river near Calicut. Its property comprises over 5,000 acres of opened land in as many as fourteen separate estates, besides a large area not cultivated. The biggest estate is Guynd, an unbroken area of coffee in full bearing measuring over 800 acres. The pulping-house on this, which must be the biggest in South India, was opened by Lord Lytton, when Viceroy, in 1877, as a tablet over the entrance commemorates. Several Governors of Madras have also specially visited the Valley. At Guynd is its post office.

Besides the estates carved out of Captain Godfrey's land and those which belong to the Ouchterlony Trust, there are five (Walwood, Balmadies, Seaforth, Glenvans and Barwood) which were sold by the Trust to others.

Up to 1890 nearly all the coffee was grown in the open; but in that year shade trees (mainly Grevillea) were planted to check the ravages of the borer; and most of the Valley now looks, from above, as like an unbroken forest as it did before any of it was opened up. Shady paths and roads innumerable cross and re-cross in every direction under the trees, streams and rivers pour down from the plateau to the east (in several cases over beautiful falls) and the place is one of the most picturesque areas in the district. A bridle-path runs down to it from Naduvattam past 'the tin bungalow' and a District Board cart road enters it from Gúdalúr, crossing the Pándi river by a girder bridge erected in 1899 at a cost of Rs. 17,000.

Pandalúr: Fifteen miles from Gúdalúr along the Vayitri road. Its sudden elevation during the gold-boom of 1879–82, and its equally sudden collapse, have been referred to on pp. 17 and 19. It was the head-quarters of the Head Assistant Collector during part of the boom, and he lived at the Balcarres bungalow, on a hillock north of the road to Dévála, and held his office in the house just west of and above the Pandalúr bazaar, which is still known in consequence as 'the Cutcherry bungalow.' The real centre of the mining enterprize was Dévála, Pandalúr being, as a report of the time said, 'nothing but the mushroom offspring of mining expectations and jobbery;' but Pandalúr contained more than one sanguine spirit who confidently believed that it was destined to become a considerable town. In 1881 it was divided into suitable sites by the manager of the Phœnix Company (within whose land it lay) and a rent of no less than Re. 1 per week was charged for plots 15 feet by 30. A church, a bank, a town hall and a piped water-supply were all projected, and a race-course was laid out round the adjoining paddy-flat and Sky Meetings were held. Picnics, lawn-tennis parties and dances were for long the order of the day, and angry shareholders afterwards bitterly complained that it would have been better if the time and money lavished on these had been devoted to work upon the mines. The place is now reduced to a few huts, its former race-course is barely traceable, and (except three or four) the houses which were once so numerous in and around it have been demolished for the sake of their materials.

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